EZEMVELO KZN WILDLIFE

Conservation, Partnerships & Ecotourism

OPHATHE GAME RESERVE

Protected Area

MANAGEMENT PLAN

OPHATHE GAME RESERVE

Protected Area Management Plan

EZEMVELO KZN WILDLIFE™

Conservation, Partnerships & Ecotourism

Prepared by

Ezemvelo KZN Wildlife

Protected Area Management Planning Unit

& Ophathe Game Reserve Planning Committee

Developed: 2016

Citation:

Ophathe Game Reserve: Management Plan. Version 1.0 (2016), Ezemvelo KZN Wildlife, Pietermaritzburg, KwaZulu-Natal, South Africa.

PREFACE

Ezemvelo KZN Wildlife has adopted an overarching protected area management strategy that focus on developing, together with stakeholders - a Protected Area Management Plan for Ophathe Game Reserve. This management plan is its primary and overarching management document and sets out the desired state for Ophathe Game Reserve and the objectives to achieve this desired state. It forms the framework within which the protected area will be managed and developed towards the achievement of its management objectives, derived in collaboration with the protected area's stakeholders during 2016.

The protected area management planning process has been designed to meet the statutory requirements of the National Environmental Management Protected Area Act No. 57 of 2003 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 the development and implementation of the plan. An annual review process of the management plan and its subsidiary plans 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 protected area's objectives. Ezemvelo KwaZulu-Natal Wildlife, as the appointed Management Authority for Ophathe Game Reserve, hereby commits itself to the implementation of this plan.

B Khoza
Acting Chief Executive Officer

AUTHORISATION

The Protected Area Management Plan for Ophathe Game Reserve is recommended by the Ophathe Game Reserve Planning Committee, a multi-disciplinary team consisting of:

EZEMVELO KZN WILDLIFE

Richard Penn Sawers	Park Manager: Northern Protected Areas
Andile Mhlongo	Conservation Manager EOHP
Lucas Myeza	Ex Conservation Manager EOHP
Bhekani Gumbi	Community Conservation Officer
Rickert van Westhuizen	District Ecologist Zululand
Jabulani Biyela	District Conservation Officer
Shiven Rambarath	Protected Area Management Planning Technician

APPROVAL

This Protected Area Management Plan for Ophathe Game Reserve (2016) is approved by:

DEPARTMENT OF ECONOMIC DEVELOPMENT, ECO-TOURISM & ENVIRONMENTAL AFFAIRS

TITLE	NAME	SIGNATURE	DATE
MEC: ECONOMIC DEVELOPMENT, ECO-TOURISM & ENVIRONMENTAL AFFAIRS	SIHLE ZIKALALA		10/07/2018

RECOMMENDED:

EZEMVELO KZN WILDLIFE

TITLE	NAME	SIGNATURE	DATE
A/CHIEF EXECUTIVE OFFICER	Bhekisisa Khoza		31/05/2018

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF MAPS

LIST OF APPENDICES

EXECUTIVE SUMMARY

Introduction

The Ophathe Game Reserve (OGR), is an 8825.54 Hectare (Ha) protected area located south west from the town of Ulundi in KwaZulu-Natal. The game reserve is bordered by the P52 – Provincial road on the northern side, while the White Mfolozi borders on the eastern boundary. The game reserve extends over the UThungulu and Zululand District Municipality and the Ulundi and Mthonjaneni Local Municipality.

The Ophathe Game Reserve was proclaimed in 1991 under the KwaZulu Nature Conservation Act of 1975. Furthermore to this, the game reserve was re-proclaimed in 2006 to incorporate the Emakhosini Heritage Park. The game reserve is surrounded by a number of protected areas such as the Hluhluwe-iMfolozi Park which lies 35km downstream of the White Mfolozi River and the Nkandla Forest complex which lies 40km south west of the game reserve.

The Reserve does offer some low use tourism activities such as picnic sites, walking trails and heritage sites with the potential to improve in the future.

The Ophathe Game Reserve comprises of the following vegetation: Dry Coast Hinterland Grasland, Midlands Mistbelt Grassland, Zululand Lowveld, Alluvial and Freshwater Wetlands. Floral species of importance includes the Natal giant cycad (*Encephalartos natalensis*) which is Near Threatened according to South African Red Data Book and *Aloe saundersiae* which is Critically Endangered. The *Gnidia anthylloides* and *Buxus macowanii* is endemic to South Africa. The Bastard Onionwood or Common Onionwood (*Cassipourea gerrardii*) is protected under the ordinance.

Important fauna species that the Ophathe Game Reserve provides home to includes the Cape Vulture (*Gyps coprotheres*) which forages at the reserve, White-headed Vulture (*Trigonoceps occipitalis*), Lappet-faced Vulture (*Torgos tracheliotos*), White-backed Vulture (*Gyps africanus*) , Southern Ground-Hornbill (*Bucorvus leadbeateri*), and the Black Rhinoceros (*Diceros bicornis minor*) which have historically occurred here with a potential to be re-introduced, are considered Endangered according to the Threatened or Protected Species Regulations. Other species such as the Martial Eagle (*Polemaetus bellicosus*), African Marsh-Harrier (*Circus ranivorus*), Southern Bald Ibis (*Geronticus calvus*), African Grass-Owl (*Tyto capensis*) and Leopard (*Panthera pardus melanosticta*) are Vulnerable according to the Threatened or Protected Species Regulations.

Ophathe Game Reserve is also home to the Wandering Sandman (*Spialia depauperata australis*), Silver-barred Charaxes (*Charaxes druceanus druceanus*) and the *Ulodesmus natalensis natalensis* which is restricted and endemic to KwaZulu-Natal. The Rainforest Brown (*Cassionympha cassius*), Swanepoel's Copper (*Aloeides swanepoeli*) and Mrs Ravens Flat (*Calleagris kobela*) is endemic to South Africa.

The forest complex is home to reptiles and amphibian species such as the Kwazulu-Natal hinged-back tortoise (*Kinixys natalensis*) and Leopard tortoise (*Stigmochelys pardalis*) which is listed as Appendix II under Cites.

Vision of Ophathe Game Reserve

"To contribute to biodiversity conservation, sound resource management, protection of historical and cultural assets, while providing sustainable eco-tourism and to form the core of a consolidated conservation area through park expansion and Bio-economy Nodes with community support by a means of employment opportunities, environmental awareness and education."

Management issues, challenges and opportunities at Ophathe Game Reserve

Ophathe Game Reserve is faced with a number of issues which are addressed within the management plan. The reserve is faced with financial instability and a lack of human resources. The staff accommodation presently in the reserve is inadequate. There have been incidents of poaching and arson fires in the reserve as well as illegal grazing and inadequate access control.

However the reserve can be seen as an important aspect of the uMfolozi Biodiversity Economy Node and there are several opportunities for the reserve to build relationships with its surrounding neighbours and the private sector. The reserve does have a number of positive attributes which will make it easier to execute possible opportunities.

Managing the issues, challenges and opportunities at Ophathe Game Reserve

Key management interventions required will include the maintenance of the boundary fence

which will stop a number of issues mentioned above. A management plan will have to be developed to address the issue of alien invasive plant species and soil erosion. Processes will be put into place to address the issue of dilapidated infrastructure and possible eco-tourism opportunities.

New partnerships and relationships will be formed to implement the outcomes of the uMfolozi Biodiversity Economy Node.

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. This will guide implementation and monitoring of the management plan.

ABBREVIATIONS

AMAFA	Amafa aKwaZulu-Natali (KwaZulu-Natal Provincial Heritage Agency)
APO	Annual Plan of Operation
BEN	Biodiversity Economy Node
CARA	Conservation of Agricultural Resources Act No. 43 of 1983
CCA	Community Conservation Area
CDP	Conservation Development Plan (Component of Ezemvelo KZN Wildlife protected area management plan)
CEO	Chief Executive Officer
CMS	Co-management Structure
DCO	District Conservation Officer
DEA	National Department of Environmental Affairs
DWAS	Department of Water Affairs and Sanitation
EDTEA	Department of Economic Development, Eco-tourism and Environmental Affairs
EIA	Environmental Impact Assessment
EOHP	Emakhosini Ophathe heritage Park
Ezemvelo	Ezemvelo KwaZulu-Natal Wildlife
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EWT	Endangered Wildlife Trust
FP	Financial Plan
FPA	Fire Protection Association
GDP	Gross Domestic Product
GIS	Geographical Information System
IDP	Municipal Integrated Development Plan
IUCN	International Union for the Conservation of Nature
KZN	KwaZulu-Natal Province of the Republic of South Africa
KZNCMA	KwaZulu-Natal Nature Conservation Management Act No. 9 of 1997
KZNHRA	KwaZulu-Natal Heritage Resources Act No. 10 of 1997
MEC	Member of the Executive Council
MoA	Memorandum of Agreement
MoU	Memorandum of Understanding
MP	Management Plan
NEMA	National Environmental Management Act No. 107 of 1998
NEMBA	National Environmental Management: Biodiversity Act No. 10 of 2004
NEMPAA	National Environmental Management: Protected Areas Act No. 57 of 2003
NHRA	National Heritage Resources Act No. 25 of 1999

NPAES	National Protected Area Expansion Strategy
NR	Nature Reserve
NRPC	Nature Reserve Planning Committee
NSBA	National Spatial Biodiversity Assessment
OCNPA	Operations Committee Northern Protected Areas
OGR	Ophathe Game Reserve
PA	Protected Area
PFMA	Public Finance Management Act No. 1 of 1999
PPC	Park Planning Committee
SA	Republic of South Africa
SAHGCA	South African Hunters and Game Conservation Association
SAHRA	South African Heritage Resources Agency
SANDF	South African National Defence Force
SAPPI	South African Pulp and Paper Industry
SAPS	South African Police Service
SDF	Municipal Spatial Development Framework
SMME	Small, Micro and Medium Enterprises
SWOT	Strengths, weaknesses, opportunities and threats analysis
TFCA	Transfrontier Conservation Area
TFP	Transfrontier Park
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WWF	Word Wildlife Fund

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:

- facilitate compliance with the National Environmental Management: Protected Areas Act No. 57 of 2003;
- provide the primary strategic tool for management of Ophathe Game Reserve, informing the need for specific programmes and operational procedures;
- provide motivations for budgets and provide indicators that the budget is spent correctly;
- build accountability into the management of Ophathe Game Reserve;
- provide for capacity building, future thinking and continuity of management and
- Enable Ezemvelo KZN Wildlife to develop and manage Ophathe Game Reserve in such a way that its values and the purpose for which it was established are protected.

2 INTRODUCTION

2.1 STRUCTURE OF THE PLAN

The management plan has been divided into three main sections to provide an easy to use reference for protected area management. The Context section provide background information to both the protected area and the planning process (Part 1 - 2), the Strategy section provides the 'roadmap' to the management of the protected area (Part 3 – 5) [What is the desired state and how will we get there?] and the Operational section (Part 6 – 8) provides for the implementation of the management plan. This section together with the conservation targets and wildlife management strategies and the Annual Plan of Operation forms the Operational Management Plan that are extracted in a separate document to facilitate implementation.

Table 1: Structure of the management plan

CONTEXT	
Section 1	Provides an introduction and background to the management plan. It describes the legislative basis and the institutional and policy framework for the management of protected areas. This section also address the planning approach that was followed in the development of the management plan as well as the planning approach for managing the protected area.
Section 2	Establishes the context of the protected area, providing the basis for the strategic and operational management frameworks that follow. It establishes the values and the purpose of the protected area that needs to be addressed in the management plan and requires protection from negative impacts. This section relates directly to site specific context of the protected area.
STRATEGY	
Section 3	Sets out the vision and objectives that must be achieved in efforts to effectively conserve the protected area.
Section 4	Sets out the zonation of the Ophathe Game Reserve, outlining the permissible land uses in particular zones. It also established principles for the buffer areas contiguous to the protected area.
Section 5	Describes the administrative structure required to effectively manage Ophathe Game Reserve. It indicates both current structure and required structure for the effective management of the protected area.
OPERATIONS	
Section 6	Sets out the detailed management targets that must be achieved in managing the protected area. These are provided in the management tables which are the operational or implementing component of the management plan.
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.

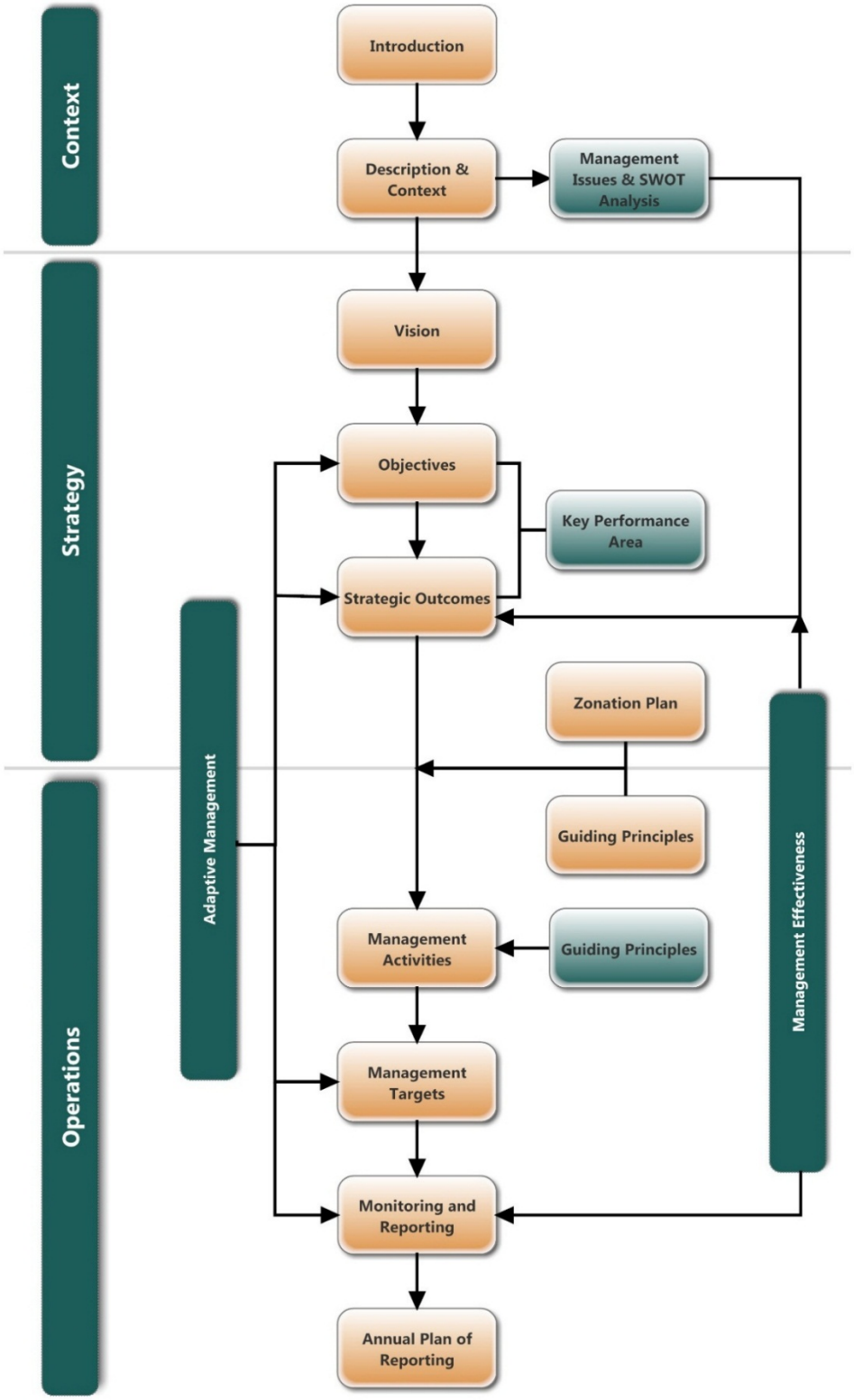


Figure 1: Structure of the protected area management plan

2.2 THE LEGISLATIVE BASIS FOR THE MANAGEMENT OF PROTECTED AREAS

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

The 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"*. It sets out the mechanisms for the declaration of protected areas and the requirements for their management. A detailed list of relevant legislation is provided in Appendix C. Managers are required to familiarise themselves with the purpose and contents of the statutes and their subsequent amendments and regulations.

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 and eradication strategy in the protected area management plan. See Appendix D for the Invasive species monitoring, control and eradication plan for Ophathe Game Reserve.

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 R.985, Listing Notice No.3, there are a number of activities that require environmental approval specifically as a result of their proximity to a protected area. The implication of this is that if any of the activities listed in Appendix E are proposed in the protected area, 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 eco-tourism development or operational management within the protected area or its buffer areas will thus also require environmental authorisation.

2.3 INSTITUTIONAL FRAMEWORK FOR THE MANAGEMENT OF PROTECTED AREAS IN KWAZULU-NATAL

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

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

2.4 THE POLICY FRAMEWORK GUIDING THE MANAGEMENT OF PROTECTED AREAS

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:

- White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity of 1997.
- Bioregional Approach to South Africa's Protected Areas, 2001/2002.
- Community Based Natural Resource Management Guidelines, 2003.
- National environmental management principles set out in section 2 of the National Environmental Management Act.

Within the province, Ezemvelo KZN Wildlife has adopted a Five Year Strategic Plan and Performance Plan for 2015-2020, which has developed the following corporate strategic profile:

VISION

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

MISSION STATEMENT

"To ensure effective conservation, sustainable use of biodiversity, and promote ecotourism within KwaZulu-Natal in collaboration with stakeholders for the benefit of present and future generations"

CORE VALUES

- Passion — We shall be passionate in what we do.
- Respect — We shall perform our duties in a professional, ethical manner.
- Trust — We shall act transparently with integrity and honesty in all we do.
- Innovation — We shall embrace a culture of learning, adaptation and creativity at all times.
- Excellence — We shall strive to best apply best practices to achieve the highest quality and standards at all times.

STRATEGIC OUTCOMES

- Environmental assets and natural resources that are well protected and continually enhanced.
- An efficient, effective and development orientated public service and an empowered, fair and inclusive citizenship.
- Decent employment through inclusive economic growth.
- To be an efficient, effective and compliant organisation, with good governance.
- To effectively promote the mandate of the organisation to stakeholders.

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

2.5 PLANNING APPROACH

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

2.5.1 Public Trust Doctrine

Section 3 of the National Environmental Management: Protected Areas Act No. 57 of 2003 mandates the State, and hence Ezemvelo KZN Wildlife to act as the trustee of protected areas. This trusteeship is derived from the Public Trust Doctrine, which in this context obligates the Ezemvelo KZN Wildlife to support the management of all protected areas and the resources therein for the benefit for current and future generations (the beneficiaries of the Public Trust). Thus it is incumbent on Ezemvelo KZN Wildlife to use all practical means to fulfil its responsibilities as trustee of the protected area for current and succeeding generations. [See White Paper on Environmental Management — Policy for South Africa GG 749 of 1998]

2.5.2 Ecosystem-based Management

Decision-making associated with the protection of protected area's ecosystems will be scientifically based on internationally accepted principles and concepts of conservation biology. The Protected area ecosystems will be managed with minimal interference to natural processes. Specific management may be desirable, when the structure or function of a habitat or ecosystem has been significantly altered by way of human induced impacts or previous management. Specific management will only be considered when this option is the only possible alternative available to restore ecological integrity.

Provided that park ecosystems will not be impaired, the manipulation of naturally occurring processes (e.g. creation of firebreaks, damage causing animals) may take place when no reasonable alternative exists and when monitoring has demonstrated, that without direct intervention:

- there will be serious adverse effects on neighbouring lands; or
- protected area's facilities, public health or safety will be threatened; or
- The objectives of a protected area's management plan prescribing how certain natural features or cultural resources are to be maintained cannot be achieved.

Where directed management is required, it will be based on scientific research, and will employ techniques that emulate natural processes as closely as possible.

Ezemvelo KZN Wildlife will strive to be exemplary in the implementation of conservation and other environmental legislation including but not limited to environmental impact assessment and review.

Within the protected area, effort must be directed at maintaining ecosystems in as natural a state as possible and human induced disturbance must primarily be avoided. Where in those rare circumstances avoidance cannot be achieved the disturbance must be mitigated and ameliorated in compliance with Ezemvelo KZN Wildlife's conservation policies and norms and standards, and in particular the Integrated Environmental Management Policy.

It is recognised that the Ophathe Game Reserve does not contain complete or unaltered ecosystems. This, combined with increasing and cumulative disturbances from sources outside of the protected area such as adjacent land use, upstream effects of pollution, colonisation of invasive and alien species, and visitor use, is likely to result in irreversible degradation of the protected area's ecosystems, the loss of biodiversity and impoverishment of gene pools.

Ecosystem management must be derived from a conceptual and strategic basis for the protection of park ecosystems which is based on sound research and monitoring. It must involve a holistic view of the natural environment to ensuring that all management decisions take into consideration the complex interactions and dynamic nature of the ecosystems and their limited capacity to withstand and recover from human induced disturbance.

It is recognised that the Ezemvelo KZN Wildlife's protected areas are becoming increasingly important, if not vital, in national and international efforts to maintain biodiversity and genetic resources of South Africa. Thus the management of the protected areas ecosystems must be credible and solidly based in science and best management practice. In this, a rigorous application of conservation science in the collection and interpretation of research and monitoring data must be achieved.

It is further recognised that, in particular cumulative, human induced disturbance or poor management practices have far-reaching, long-lasting and potentially irreversible negative impacts effects on species, habitats, ecosystems and the protected area as a whole. It is thus recognised that a cautious and risk adverse approach must be exercised.

2.5.3 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 2). 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.

Adaptive management enables protected area managers to:

- Learn through experience.
- Take account of, and respond to, changing factors that affect the protected area.
- Continually develop or refine management processes.
- Adopt best practices and new innovations in biodiversity conservation management.
- Demonstrate that management is appropriate and effective.

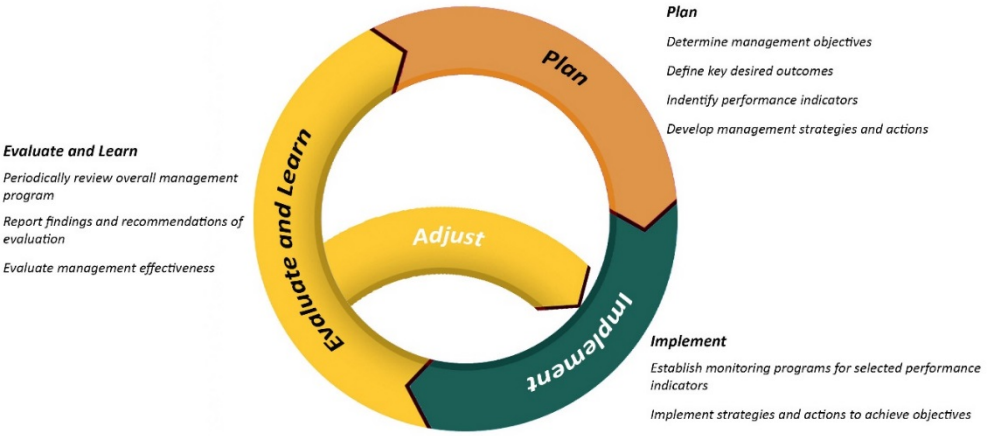


Figure 2: The adaptive management cycle

2.5.4 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 27th of October 2016. 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 protected area management.

3 DESCRIPTION OF OPHATHE GAME RESERVE AND ITS CONTEXT

3.1 BACKGROUND TO OPHATHE GAME RESERVE

The Ophathe Game Reserve (OGR), is an 8825.54 Hectare (Ha) protected area located south west from the town of Ulundi in KwaZulu-Natal. The game reserve is bordered by the P52 – Provincial road on the northern side, while the White Mfolozi borders on the eastern boundary. The game reserve extends over the UThungulu and Zululand District Municipality and the Ulundi and Mthonjaneni Local Municipality.

The Ophathe Game Reserve was proclaimed in 1991 under the KwaZulu Nature Conservation Act of 1975. Furthermore to this, the game reserve was re-proclaimed in 2006 to incorporate the Emakhosini Heritage Park. The game reserve is surrounded by a number of protected areas such as the Hluhluwe-iMfolozi Park which lies 35km downstream of the White Mfolozi River and the Nkandla Forest complex which lies 40km south west of the game reserve.

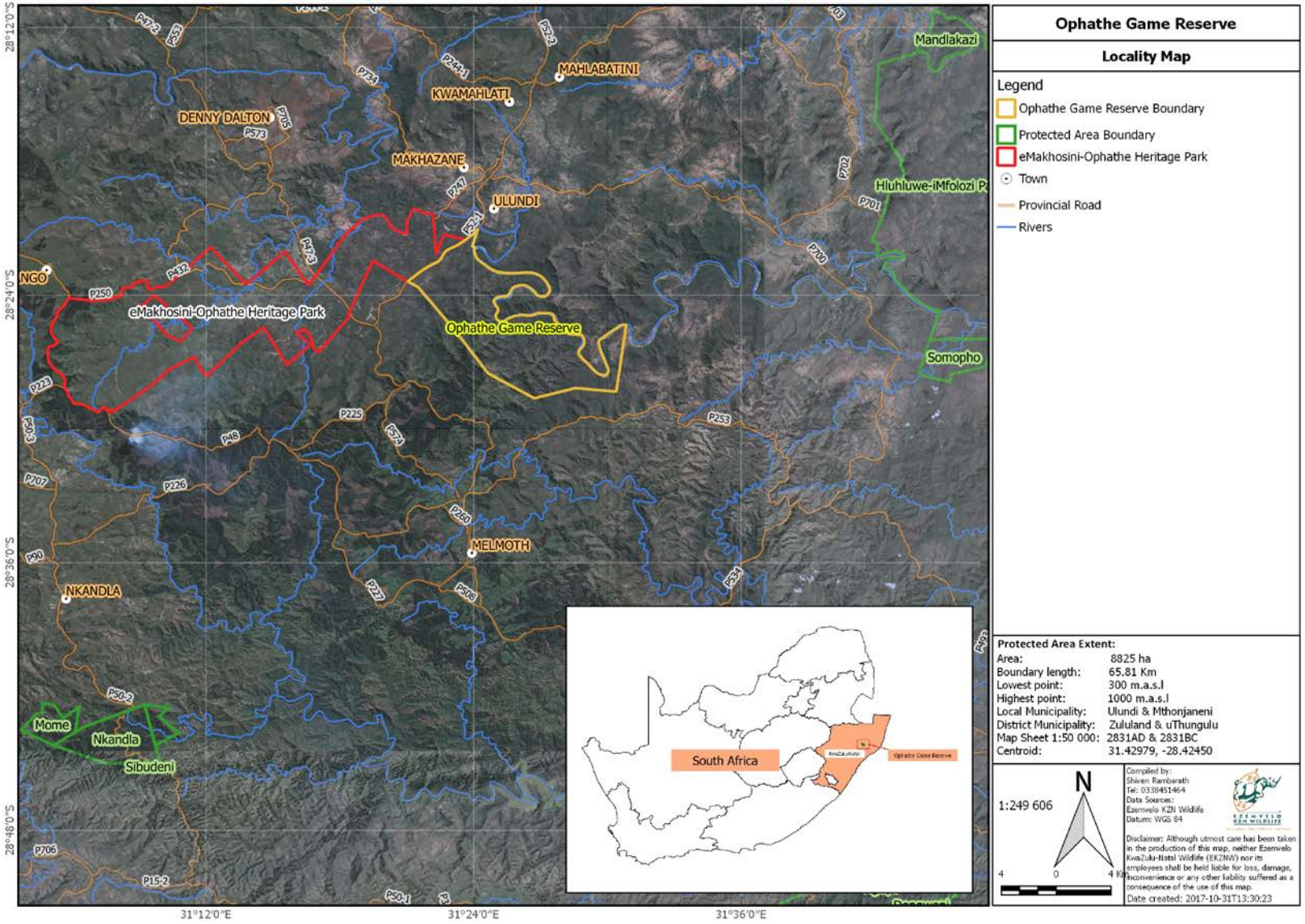
The Reserve does offer some low use tourism activities such as picnic sites, walking trails and heritage sites with the potential to improve in the future.

The Ophathe Game Reserve comprises of the following vegetation: Dry Coast Hinterland Grasland, Midlands Mistbelt Grassland, Zululand Lowveld, Alluvial and Freshwater Wetlands. Floral species of importance includes the Natal giant cycad (*Encephalartos natalensis*) which is Near Threatened according to South African Red Data Book and *Aloe saundersiae* which is Critically Endangered. The *Gnidia anthylloides* and *Buxus macowanii* is endemic to South Africa. The Bastard Onionwood or Common Onionwood (*Cassipourea gerrardii*) is protected under the ordinance.

Important fauna species that the Ophathe Game Reserve provides home to includes the Cape Vulture (*Gyps coprotheres*) which forages at the reserve, White-headed Vulture (*Trigonoceps occipitalis*), Lappet-faced Vulture (*Torgos tracheliotos*), White-backed Vulture (*Gyps africanus*) , Southern Ground-Hornbill (*Bucorvus leadbeateri*), and the Black Rhinoceros (*Diceros bicornis minor*) which have historically occurred here with a potential to be re-introduced, are considered Endangered according to the Threatened or Protected Species Regulations. Other species such as the Martial Eagle (*Polemaetus bellicosus*), African Marsh-Harrier (*Circus ranivorus*), Southern Bald Ibis (*Geronticus calvus*), African Grass-Owl (*Tyto capensis*) and Leopard (*Panthera pardus melanosticta*) are Vulnerable according to the Threatened or Protected Species Regulations.

Ophathe Game Reserve is also home to the Wandering Sandman (*Spialia depauperata australis*), Silver-barred Charaxes (*Charaxes druceanus druceanus*) and the *Ulodesmus natalensis natalensis* which is restricted and endemic to KwaZulu-Natal. The Rainforest Brown (*Cassionympha cassius*), Swanepoel's Copper (*Aloeides swanepoeli*) and Mrs Ravens Flat (*Calleagris kobela*) is endemic to South Africa.

The forest complex is home to reptiles and amphibian species such as the Kwazulu-Natal hinged-back tortoise (*Kinixys natalensis*) and Leopard tortoise (*Stigmochelys pardalis*) which is listed as Appendix II under Cites.



Map 1: Locality of Ophathe Game Reserve

3.2 THE VALUES OF OPHATHE GAME RESERVE

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

The protected area's values, in particular those that underlie the functioning of its ecosystems, will be given the highest degree of protection to ensure the persistence of these systems.

Table 2: Values of Ophathe Game Reserve

Natural values	▪ An area of unique natural beauty and a relatively untransformed landscape.
	▪ Contribute to protection of important vegetation types (i.e. Dry Coast Hinterland Grasland, Midlands Mistbelt Grassland, Zululand Lowveld, Alluvial and Freshwater Wetlands) and habitat types and species.
	▪ Provide protection for threatened and endangered species of plants and animals and their habitats.
	▪ Provides important ecosystem services especially in terms of water services provided by the IMfolozi River to downstream users.
	▪ Overall Ecosystem goods and services (Resources, water, soil etc.)
	▪ IMfolozi River forms a portion of protected area (Boundary)
Heritage values	▪ Protection of a nationally important historical site.
	▪ Protect important living heritage including spiritual and ritual values for the Zulu nation including cultural tradition, oral history and rituals as well as indigenous knowledge and cultural landscapes.
	▪ Grave and burial sites.
Socio-economic values	▪ Contribute to the local economy through seasonal job opportunities.
	▪ Low scale tourism with the potential to increase.
	▪ Environmental and cultural awareness program.
	▪ Protected Area Expansion with economic benefits.

3.3 THE PURPOSE OF OPHATHE GAME RESERVE

Consistent with Section 17 of the Protected Areas Act, the purpose of Ophathe Game Reserve is to:

- protect ecologically viable areas representative of KwaZulu-Natal's biological diversity and its natural landscapes;
- preserve the ecological integrity of the area;
- conserve the important biodiversity in the province of KwaZulu-Natal;
- protect areas representative of ecosystems, habitats and species naturally occurring in the province;
- protect KwaZulu-Natal's rare or vulnerable species;
- protect an area which is vulnerable or ecologically sensitive;
- assist in ensuring the sustained supply of environmental goods and services;
- provide for the sustainable use of natural and biological resources;
- create or augment destinations for nature-based eco-tourism;

- manage the interrelationship between natural environmental biodiversity, human settlement and economic development;
- contribute to human, social, cultural, spiritual and economic development; or
- Rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species.

Furthermore, the following park specific items apply to Ophathe Game Reserve:

- Cultural and Historical Context

The Reserve is associated with the Emakhosini Valley, the birthplace of the Zulu Nation, who played a major role in the history of the formation of South Africa. As such, the Reserve, in association with AMAFA, can play a crucial role in the preservation and interpretation of the proud Zulu historical and cultural heritage. To this end, a Memorandum of understanding has been signed between these two organizations that provides for the management of the two areas as a single organizational unit, the Emakhosini-Ophathe Heritage Park (EOHP) although this plan primarily focuses on the Ophathe Game Reserve.

- Nature-based outdoor Recreational Opportunities.

OGR is situated immediately adjacent to Ulundi, a growing town/city with special cultural value and which houses the Legislative Assembly and a large Public Service infrastructure. Associated with this, it has a growing community whose recreational needs are poorly catered for. OGR therefore is well placed to provide an easily accessible, healthy, outdoor conservation-based recreational opportunity to these potential user groups.

- Interpretation and Educational Value

OGR can also play a crucial role as an interpretive and educational resource for the large and rapidly growing urban and rural communities in the area.

- Black rhino

Black rhino have been introduced into OGR. The first male was introduced in 1998, with a further two males and three females being introduced during August 2000. Two calves have been born to this founder population while one adult female died from natural causes, bringing the current population to seven. In association with the World Wildlife Fund (Nederland), the opportunity is being investigated to re-establish a genetically viable population (approx 60) with in the area in partnership with neighbouring traditional authorities, commercial farmers and forestry companies.

- White rhino

Although white rhino numbers are significantly higher than those of black rhino, they remain vulnerable. The provision of an additional reserve the size of OGR within their historical range could make a significant contribution to their long-term conservation.

3.4 PROCLAMATION STATUS OF OPHATHE GAME RESERVE

The protected area was proclaimed in 1991 as a "Game Reserve" in terms of section 29 (1) of the Kwa-Zulu Nature Conservation Act, 1975 (Act 8 of 1975). The proclamation appeared in the KwaZulu Government Notice No. 289 of 1991.

In 2006, the Ophathe Game Reserve was re-proclaimed under the KwaZulu-Natal Conservation Management Act, 1997 (Act 9 of 1997) in order to incorporate the Emakhosini Heritage Park which is adjacent to the game reserve. The consolidated park was called the Emakhosini-Ophathe Heritage Park.

The Emakhosini Heritage Park is currently under the administration of Amafa aKwaZulu-Natali (KwaZulu-Natal Provincial Heritage Agency) whilst Ophathe Game Reserve is under the administration of KwaZulu-Natal Nature Conservation Services, trading as Ezemvelo KZN Wildlife.

A copy of the proclamation of Ophathe Game Reserve is contained in Appendix B.

3.5 THE REGIONAL AND LOCAL PLANNING CONTEXT OF OPHATHE GAME RESERVE

At present, a significant block of publicly owned land (24 000 ha) in the area is administered by both AMAFA and Ezemvelo KZN Wildlife. This includes most of the Emakhosini core area and Ophathe Game Reserve. However, there are a number of adjoining farms that are defined as being part of the EOHP's "core area" (Robertson 2007). This is on account of the location of important graves or historical sites on these farms. It is considered imperative that these must be secured into Public ownership or registered as Nature Reserves in terms of Ezemvelo Stewardship program.

The surrounding commercial farming areas to the north-west, west and south were defined as the "peripheral area". These are considered important from a catchment management and aesthetic perspective (to avoid undesirable developments occurring which would be visible from the Unmodified zones of the Park). The possibility of establishing a "contractual park" arrangement with these landowners should be pursued wherever possible; this will enable them to become participants in the EOHP development on a mutually beneficial basis in line with Ezemvelo partnerships Norms and Standards.

A third group of immediate neighbours are the Traditional Councils, whose land lies to the north and north-east. As there are a number of potential synergies between these areas and the Park, an adapted form of "contractual park" arrangement will be entered into with those Traditional Authorities that are interested in participating in a way that will benefit their areas and the Park.

Linking EOHP with Hluhluwe-iMfolozi Park by means of a "corridor" of land managed in a manner that will allow the movement of wildlife between these two Protected Areas is a priority in terms of Ezemvelo Provincial Strategy. This is further discussed under point 3.5.3– Biodiversity economy Nodes.

3.5.1 The National Protected Area Expansion Strategy

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

Focus areas are large areas of intact land with un-fragmented areas of high importance for biodiversity representation and ecological persistence which are best suited for protected area expansion.

In terms of the NPAES, areas around the southern boundary of Ophathe Game Reserve are identified as priorities for protected area expansion. The protected area falls within Region 24 of the National Protected Area Expansion Strategy focus areas, the Maputaland Delagoa Imfolozi Focus Area in KwaZulu-Natal.

On the basis of the NPAES, at a national level, Ophathe Game Reserve is a strategically important protected area that forms a critical nodal point for the expansion of protected area efforts.

3.5.2 The Provincial Protected Area Expansion Plan

The KwaZulu-Natal Protected Area Expansion Plan (Ezemvelo KZN Wildlife, 2010) also identified areas around the borders of Ophathe Game Reserve as priorities for protected area expansion and the

protected area forms a key hub in creating a connected protected area system in the region.

Certain areas around Ophathe Game Reserve are characterised by high levels of irreplaceability, largely due to losses of natural habitat within the grassland biome and the individual vegetation types in which they occur.

Land identified as a priority for protected area expansion may be incorporated into Ophathe Game Reserve either through land acquisition or through stewardship agreements, established with individual landowners or communities.

In order to capitalize on these opportunities it is of great importance to resolve all issues regarding the settlement of the land claim and co-management of the area.

3.5.3 Biodiversity Economy Nodes

Biodiversity Economy Nodes were developed to harness the development potential of our cultural heritage and biodiversity assets in a responsible manner. This can be achieved by the collaboration of various organisations and partners.

The Ophathe Game Reserve forms part of the Umfolozi Biodiversity Economy Node which consist of the Hluhluwe-iMfolozi Park and eMhakosini-Ophathe Heritage Park as the core conservation areas that are linked to private protected areas, stewardship sites, private game farms and communal land. This Biodiversity Economy Node has the potential to conserve an area in excess of 150 000 hectares.

The purpose of the project is to:

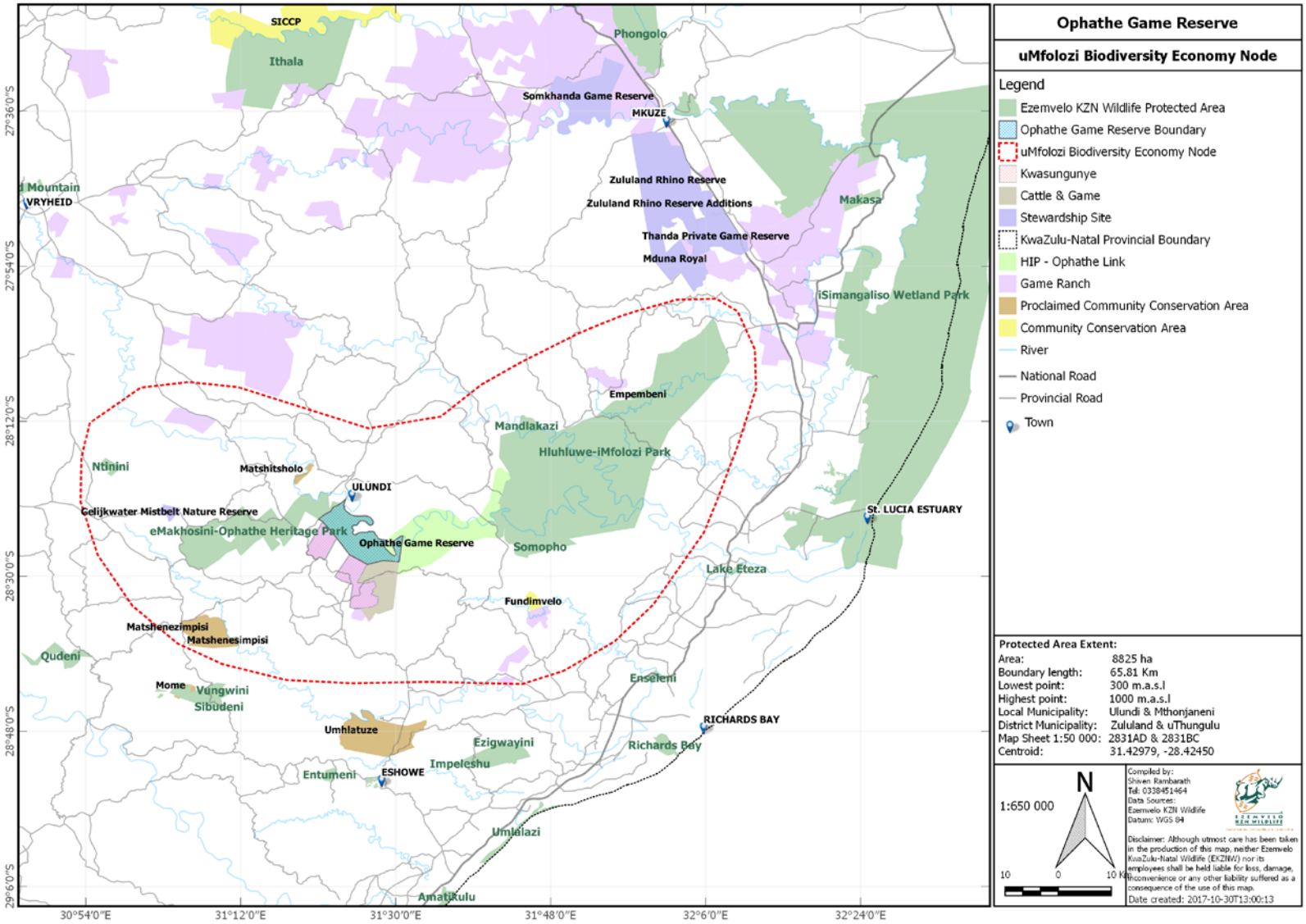
1. Develop a model for a public-private-community partnership that enables meaningful co-management of a protected area whilst enabling Ezemvelo KZN Wildlife to become more financially self-sufficient in its protected area management through operational cost savings and revenue generation.

2. The model envisages the dropping of state protected area fences to incorporate private- and communally-owned land and expand Ophathe Game Reserve.

3. Implement a pilot project at Ophathe Game Reserve in which the model is further developed, tested and refined through the Kwasanguye-Vriendschap-Ezemvelo-SAHGCA Partnership.

4. Integrate the learning and the successful components of the model into the Biodiversity Economy in an effort to enable socio-economic transformation of the conservation and wildlife sectors.

In principle, Ezemvelo KZN Wildlife have agreed to the development of an agreement where the Kwasangunye Community with their private sector partners and support from the South African Hunters and Game Conservation Association (SAHGCA), may manage parts of the eMakhosini-Ophathe Heritage Park, including Ophathe Game Reserve. See Appendix I – Biodiversity Economy Nodes.



Map 2: uMfolozi Biodiversity Economy Node

3.6 CULJTURAL CONTEXT OF OPHATHE GAME RESERVE

The strong linkage between Zulu culture and the rich natural history of the region provides an opportunity to interpret the synergy between nature conservation and the cultural and historical resources within the area.

A brief summary of the major historical events directly associated with OGR is presented below.

- The First Ndwandwe Campaign

The first Ndwandwe campaign was fought centring on the KwaGqokli hill just outside the western boundary of OGR, within the EOHP. This was a resounding victory engineered by King Shaka in his first major action as an independent commander and laid the foundation for his future career and the rise of the Zulu nation.

- The Battle of the Ophathe Gorge and the Umfolozi Valley

In December 1838, the Voortrekkers moved their cattle to the top of the Mthonjaneni heights and formed a Laager probably near the brow of the hill overlooking the Ophathe valley and the Ulundi plain. After having been led to believe by 'Bongoza', whom they had "captured", that some of "their" cattle were being held in the Ophathe valley, the Voortrekkers decided on an expedition to retrieve these.

This expedition, numbering some 350 men, left the laager early on 27 December 1838 under the guidance of 'Bongoza'. There is considerable dispute about the route taken but in any event, the Voortrekkers entered the valley and progressed to near the junction of the Ndlovana stream and the Ophathe River where they were ambushed.

A battle then took place covering a considerable area of land, crossing the White Umfolozi River towards Mahabathini, and returning across the White Umfolozi River at dusk where the Voortrekkers suffered serious losses during the fording of the river. However, the Voortrekkers were successful in crossing the river and returning to their laager long after dark. Three days later, they withdrew from the area.

The significance of this battle has often been overlooked, as had the Voortrekkers not withdrawn, the course of history may have been significantly different.

- The Anglo-Zulu war

The battle of Isandlwana remains one of the most significant in the history of South Africa. In this battle, the Zulu, a relatively undeveloped nation, handed a resounding defeat to the British imperial army and established their prestige in the eyes of the world. However, Lord Chelmsford pressed on and defeated the Zulu at the battle of Ulundi of 4 July 1897. The British forces encamped on the Mtonjaneni hills overlooking the Ophathe Valley and approached Ondini along a route roughly following the present Western boundary of OGR for the battle.

After the English victory in the English/Zulu war of 1879, the land that is now the OGR was allocated by representatives of the British Government, through the colonial Government, as white farmland. It remained as such until the early 1980's when the Government bought it from the individual farm owners as part of a Government land consolidation plan. It then passed into the control of the South African Development Trust South African Development Trust (SADT) until such time as the Government decided what to do with it.

The decision to use the land for conservation resulted in the Reserve being proclaimed by Government Notice No. 289 on the 3rd December 1991. The last cattle were removed from the Reserve in 1993 and fencing of the boundary was completed during that year.

A cultural Heritage Assessment was carried out in November 2016. The findings of this report can be found under Appendix K.

3.7 THE HISTORY OF OPHATHE GAME RESERVE

3.7.1 History of Eco-tourism in Ophathe Game Reserve

Ophathe Game Reserve currently has low scale tourism infrastructure such as a few picnic sites, a birding hut and view point. The level of tourism has not changed over the past years and aims remain at a low scale.

3.8 SOCIO-ECONOMIC CONTEXT

This socio-economical context is taken from the Zululand District Municipality and Ulundi Local Municipality Integrated Development Plan (IDP) (Zululand District Municipality IDP, 2012; Ulundi Municipality Integrated Development Plan, 2011). Zululand District Municipality has a population of

964 005 within an area of 14810km^2. There are 6 towns and 16 small urban settlements within the district municipality.

Ulundi Local Municipality is located on the southern boundary of the Zululand District Municipality, and has a population of 238862 which has 35319 household with 4.97 persons per household. The total area of Ulundi local municipality is 3250 km^2; the largest part is rural and undeveloped. There is significant migration of people from rural to urban area to seek employment, as Ulundi town is the only focus of economic activity. There are large densely populated tribal communities of informal settlements around Ulundi Town resulting from these migrations. These areas can be classified as emerging urban areas on the periphery of the town. The town of Ulundi is known as an important secondary administrative centre for the province where most of the jobs are in the public sector.

Approximately 53.77% of the population within Ulundi Municipality is under the age of 20. Only 39.14% of the population is economically active (not all of them are employed), 6.6% is disabled (out of 43.3% of the total disabled persons in the Zululand District municipality).

A number of Nature Reserves are found within Ulundi Local Municipality including:

- Emakhosini Opathe Heritage Park (Ezemvelo KZN Wildlife)
- Matatane Game Reserve (privately owned)
- Leopard Rock Game Reserve and Zulu Rock Game Reserve (privately owned)

With a number of activities that contribute to social upliftment such as Indigenous recreational games that takes place in July annually and Umbele Wethu Cultural Festival, where youth participates/compete in cultural and religious events that takes place in the festival.

There are three main primary economic activities within the municipality; this includes general business, agriculture and tourism.

Agriculture and tourism are identified as the key potential economic growth activities that can uplift the economy of the Ulundi Municipality and the Zululand District Municipality.

The agricultural sector is a major player in the economic development of Ulundi municipality, with half of the municipal area occupied by large commercial farms.

Commercial farming is mostly concentrated in Babanang area (approximately 3km away from Opathe Game Reserve); which includes Suger Cane, livestock and subtropical fruit farming. There are three programmes that were launched by Department of Agriculture to assist the growth of emerging farmers (One home, one garden and the mechanisation program and protection of animals). However, most of the land is owned by tribal authorities, this disadvantages economic growth of the areas in Ulundi Municipalities through the lack of job opportunities.

Ulundi Municipality is considered to be rich in cultural heritage and history that makes it the ideal tourist destination within Zululand District Municipality. Furthermore, this plays a significant role in the local economic development. Some of the tourist attractions include:

- Ondini Museum
- Amafa AkwaZulu Heritage Site
- Ondini Battlefield
- Olundi Multi Media Centre
- The Spirit of eMakhosini
- Ceza Cave
- Kwagqokli Hill

Three of the above tourist attraction sites are contained within the eMakhosini Opathe Heritage Park; these include Olundi Multi Media Centre, The Spirit of eMakhosini and Opathe Game Reserve. The Ondini Museum, Ondini Battlefield, Amafa AkwaZulu Heritage Site, and Ceza Cave are situated just a few kilometres away from eMakhosini Opathe Heritage Park. The Kwagqokli Hill is situated near the boundary of the eMakhosini Opathe Heritage Park.

The Ulundi Municipality recognises a potential tourist node which would facilitate in the economic growth and utility of tourism sites within the Ulundi Municipality; this would include the building of restaurants, curio shops and information service centre in the near future to accommodate the tourist from different parts of the globe that visit these areas.

3.9 ECOLOGICAL CONTEXT OF OPHATHE GAME RESERVE

3.9.1 Climate and Weather

A range of climatic variations occur within the Park as a result of the altitudinal differences represented within the greater Emakhosini valley.

Climatic variations are represented in the gradual change in vegetation, from the low lying valleys adjacent to the White Umfolozi River catchment in the north east where the mean annual rainfall range for BRG 22 - Lowveld is 587mm to 750mm and the annual temperature is 21.9°C. Summers are hot and winters mild to warm.

BRG 4 - Dry Coast Hinterland Ngongoni Veld and BRG 16 - Dry Lowland Tall Grassveld) occur together between 450m to 900m a.s.l. The Dry Coast Hinterland Ngongoni Veld has a mean annual rainfall range of 756mm to 780mm and occasionally droughts occur. The mean annual temperature range is from 17.6° C to 19.2°C. Summers are warm to hot and winds mild.

The mean annual rainfall of Dry Lowland Tall Grassveld is between 700mm to 800mm and the mean annual temperature is 19.4°C. Summers are warm to hot and winters mild with the occasional moderate frost.

BRG 5- Moist Mildlands Mistbelt occupies the highest altitudinal range within the Park. A humid climate is experienced with an annual rainfall ranging from 800mm to 1280mm. Heavy mists are a common and important feature, providing additional moisture particularly to forest. The mean annual temperature is 17° C. Climatic hazards include occasional droughts, usually of short duration, occasionally hail, frost which varies from slight to severe, and excessive cloudiness during the summer growing season. Hot north-westerly (berg winds) followed by sudden cold temperatures or cold fronts, make for unpredictable conditions, particularly in spring and early summer.

Rainfall occurs mainly in summer from October to March with the peak of the rainy season falling in January. Most of the rainfall is derived from instability showers. Occasional heavy showers falling in a short period of time bring localised floods, causing extensive damage. Although the rainfall is fairly reliable, droughts are apt to occur about once in seven years.

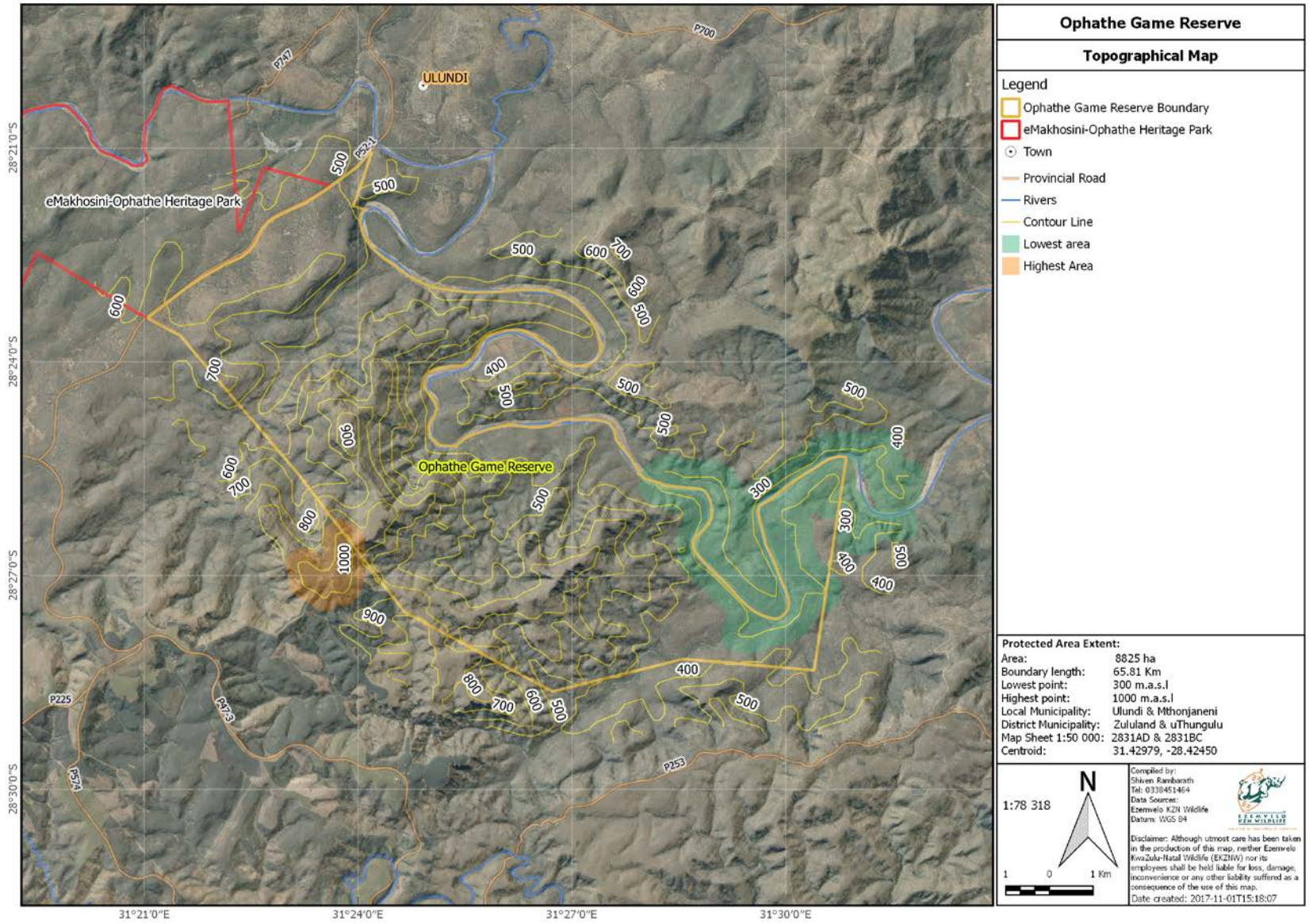
The predominating winds blow from the northeast and southwest. Gale force winds are experienced along the upper slopes of the high ridges. During the north-easterly winds in summer, sweltering warm to hot days are experienced. Cloudy weather occurs with south-westerly winds. Very occasionally hot westerly (berg winds) blow off the interior plateau presenting potential fires hazards, especially for the commercial timber plantations neighbouring the Park.

Ophathe Game Reserve is situated in the rain shadow of Mtonjaneni; as a result, the rainfall differs from east to west. The Kwibi valley in the east experiences a higher rainfall than that of the Vali section in the west.

3.9.2 Topography

The topography of the Ophathe Game Reserve has established as a result of the underlying geology which through various weathering processes driven primarily by climate has exposed the diverse, ever changing landscapes.

The Ophathe section also consists of the Natal Super Group Sandstone with the characteristic higher lying plateau and capping. Where the sandstone has eroded, the underlying more easily erodible Dwyka Group Tillite has formed the steep slopes leading into the valley bottoms. This natural eroding process has resulted in the rugged nature of the landscape within the Ophathe Game Reserve.



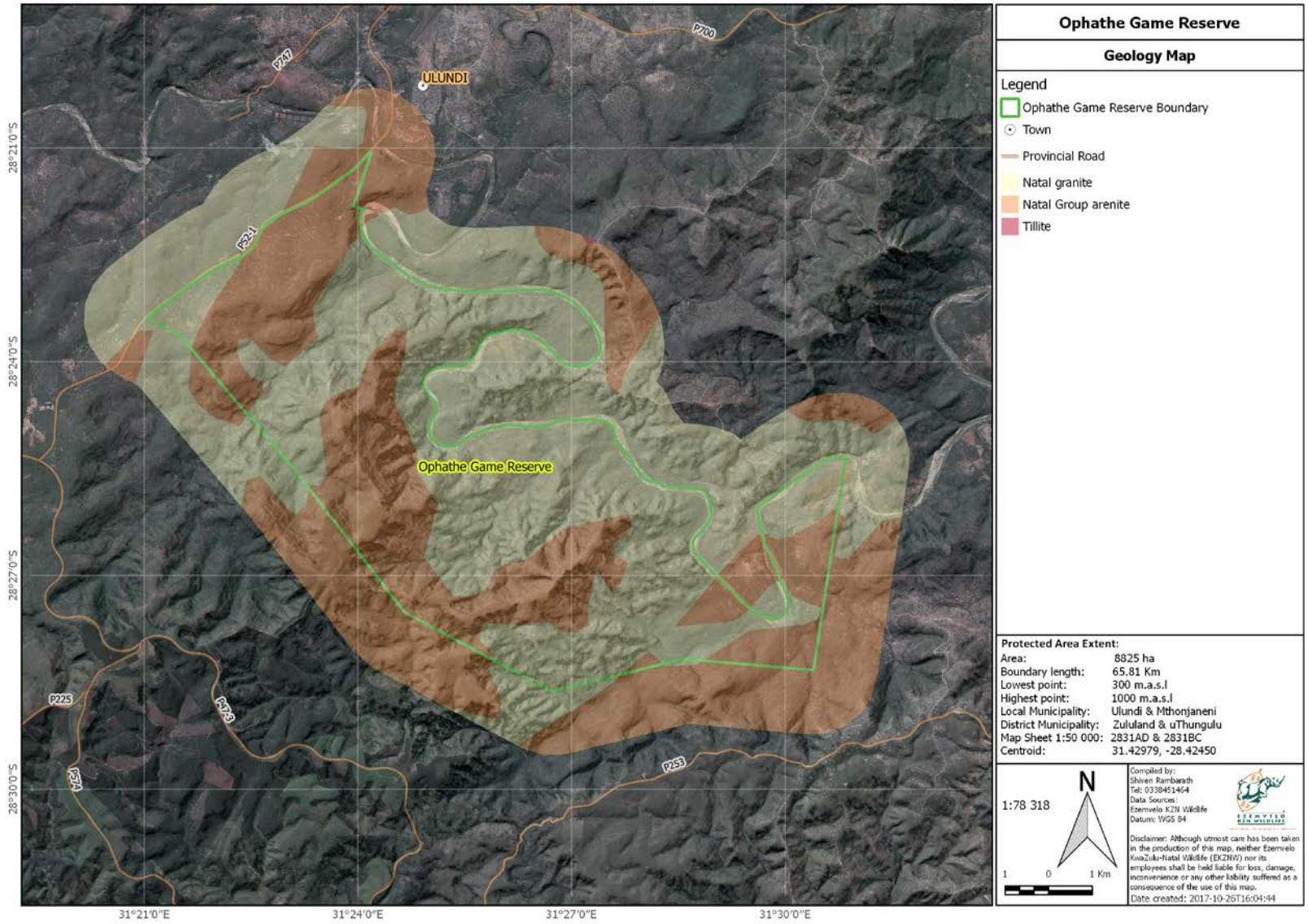
Map 3: Topography of Ophathe Game Reserve

3.9.3 Geology and Soils

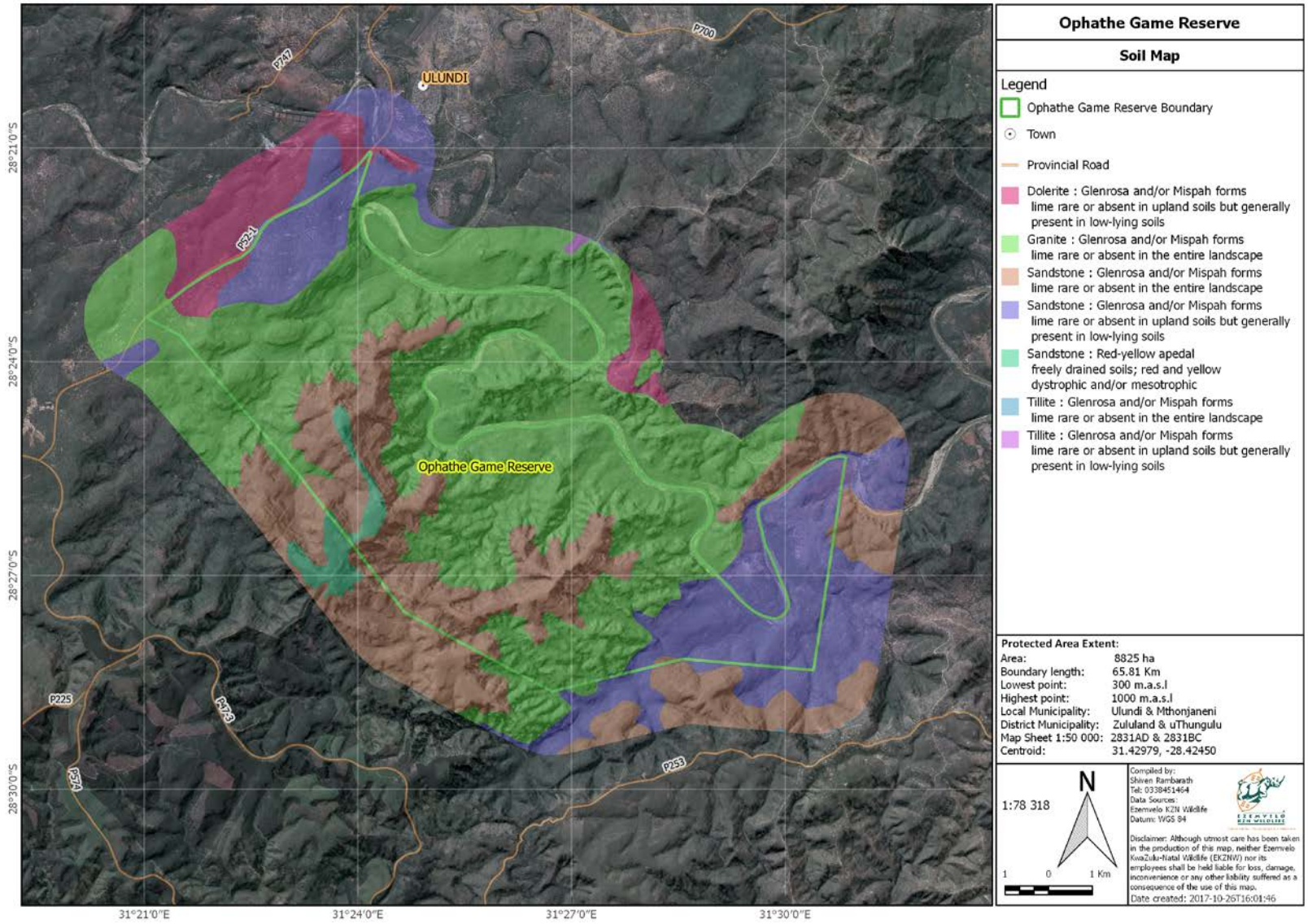
The geology within the Ophathe Game Reserve consist of Natal granite, Natal group arenite and Tillite with the Natal granite being the dominant geological layer with the reserve.

The Ophathe Game Reserve consist with several soil formations with the dominant soil formation being the Granite – Glenrosa and/or Mispah forms. This formation rarely contains lime. Other soil formations which area present within the reserve includes Dolerite – Glenrosa and/or Mispah forms, Sandstone and Tillite.

.



Map 4: Geology of Ophathe Game Reserve



Map 5: Soils of Ophathe Game Reserve

3.9.4 Geomorphology

The Ophathe section falls within the White Umfolozi river catchment area. Erosion zones have developed as a result of the highly erodible soils. These are particularly noticeable where there have been areas of more intense cultivation in the past or areas of human habitation. The rugged terrain of this section does not allow for deep bottom soils and the areas of most dynamic soil movement occur within the many tributaries that predominantly drain this section in a south-easterly direction.

3.9.5 Hydrology

Two watercourses, the Ophathe and the Kwibi River, serve the Ophathe Game Reserve. The main watercourse, the White Umfolozi River, which forms the Northeastern boundary, is excluded from this section of the park. The two watercourses together with their extensive tributary network play an important role to supplying water to game species. Several smaller tributaries drain the remaining areas of the reserve and flow directly into the White Umfolozi River. The White Umfolozi River flows in an easterly direction with the Ophathe and Kwibi Rivers, together with the smaller tributaries, which drains this section in a northeasterly direction.

The Khwibi River forms the main water source for game in the Eastern part of the reserve. The Khwibi stops flowing during most winters. Water is confined to rock pools and even these dry up during dry winters. A pump has been installed at Khwibi outpost that pumps domestic water. A pipe extends beyond the outpost some 500meters to discharge into a rock pool in the river bed. During winter water is pumped from the White iMfolozi to this point to secure water for game as the White iMfolozi has been fenced out of the Reserve.

The Ophathe Stream is generally maintained a water "trickle" during winter that kept numerous pools filled. During the drought of 2007 it dried up completely and has continued since then to be dry during winter. The cause of this is unknown.

Dams:

- Mdlulamithi Dam – artificial water supply

  Ophathe is prone to extended drought and the Vali area is characterised by deep sandy soils with poor water retention. For this reason it is approved that an artificial water supply (pump) be used to fill Mdlulamithi dam in order to maintain water during drought. This dam is located in close proximity to Vali outpost which will improved security as game, particularly black and white rhino are at risk when congregating at water sources during periods of drought.

  The pump is situated in a well next to the White iMfolozi River. Water is harvested by means of four porous pipes buried c.1 meter below the sandy river bed. Water filters into the pipe and flows into the well point. A 3.75KVA electric pump pumps the water to the filtration plant at the store building. A "T" junction in the pipe immediately in front of the filtration plant feeds to Mdlulamithi dam. Hence unfiltered water can be diverted to the dam during periods of drought.

- Mkhombe Dam

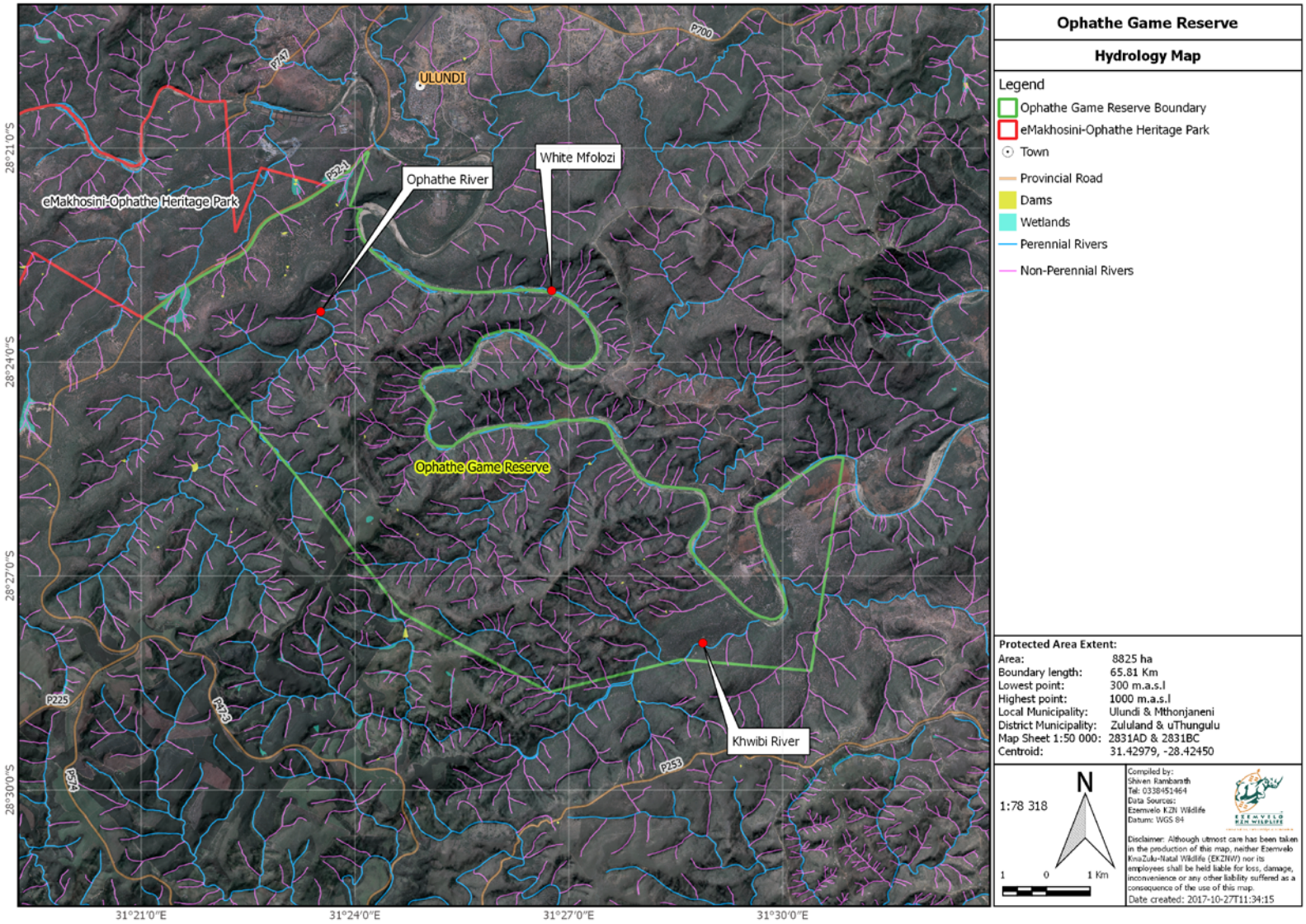
  Mkhombe Dam was breached during Tropical cyclone Demoina. The dam wall therefore needs to be repaired as funds become available. A hide has been constructed to be on the water's edge when the wall is repaired. The hide built by Honorary Officers making use of material purchased by them. The hide was therefore named the John Mellet Hide to recognise the leadership, financial and work contribution of the Eshowe Honorary Officers led by Mr. Mellet.

- Mdolozano Dam

  This dam has historically been the only dam that does not dry during periods of great drought. A bird hide is approved for this dam when funding becomes available.

Wetland and vleis:

Due to the rugged nature of the reserve, very few areas can allow for the development of wetland and vlei systems. Watercourses within the reserve valley bottom have allowed for the development of small sponge areas. Due to sediment deposition in these areas, the associated vegetation assists in holding water along the watercourse.



Map 6: Hydrology of Ophathe Game Reserve

3.9.6 Vegetation

According to the Ezemvelo KZN Wildlife Vegetation Layer, the following vegetation types are present:

3.9.6.1 Subtropical Freshwater Wetlands

Distribution:

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

Vegetation and Landscape features:

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

3.9.6.2 Subtropical Alluvial Vegetation

Distribution:

Limpopo, Mpumalanga and KwaZulu-Natal Provinces and in Swaziland: Broad river alluvia and around some river-fed pans in the subtropical regions of eastern South Africa, in particular in the Lowveld, Central Bushveld and in northern KwaZulu-Natal. The most important alluvia include the Limpopo, Luvubu, Olifants, Sabie, Crocodile, Phongolo, Usutu and Mkuze Rivers. This unit is fully embedded within the Savanna Biome. Altitude ranging from 0–1 000 m.

Vegetation and Landscape features:

Flat alluvial riverine terraces supporting an intricate complex of macrophytic vegetation (channel of flowing rivers and river-fed pans), marginal reed belts (in sheltered ox-bows and along very slow-flowing water courses) as well as extensive flooded grasslands, ephemeral herblands and riverine thickets.

3.9.6.3 Midlands Mistbelt Grassland

Distribution:

KwaZulu-Natal and Eastern Cape Provinces: KwaZulu-Natal Midlands—scattered in broad belt in the form of several major patches including Melmoth-Babanango area, Kranskop and Greytown, Howick Lions River, Karkloof, Balgowan, Cedara, Edendale, Hilton, Richmond, the Ixopo-Highflats area, Mount Malowe in the Umzimkhulu enclave of the Eastern Cape Province and the Harding-Weza area. The south-westernmost section in the Eastern Cape Province falls in the Bulembu, Gxwaleni, Longweni and Flagstaff areas. Altitude 760–1 400 m.

Vegetation and Landscape features:

Hilly and rolling landscape mainly associated with a discontinuous east-facing scarp formed by dolerite intrusions (south of the Thukela River). Dominated by forb-rich, tall, sour Themeda triandra grasslands transformed by the invasion of native 'Ngongoni grass (Aristida junciformis subsp. junciformis). Only a few patches of the original species-rich grasslands remain.

3.9.6.4 Dry Coast Hinterland Grassland

Distribution:

KwaZulu-Natal and Eastern Cape Provinces: From Melmoth in the north to near Libode in the former Transkei (including Camperdown, Umlaas Road, Eston, Bisi, iZingolweni, Ngqeleni near Mthatha) generally occurring above the SVs 3 KwaZulu-Natal Hinterland Thornveld, SVs 7 Bisho Thornveld and the SVs 6 Eastern Valley Bushveld. Altitude 450 - 900 m.

Vegetation and Landscape Features:

Undulating plains and hilly landscape mainly associated with drier coast hinterland valleys in the rain-shadow of the rain-bearing frontal weather systems from the east coast. Sour sparse wiry grassland dominated by unpalatable Ngongoni grass (Aristida junciformis) with this monodominance associated with low species diversity. In good condition dominated by Themeda triandra and Tristachya leucothrix. Wooded areas are found in valleys at lower altitudes, where this vegetation unit grades into SVs 3 KwaZulu-Natal Hinterland Thornveld and SVs 7 Bisho Thornveld. Termitaria support bush clumps with Acacia

species, Cussonia spicata, Ehretia rigida, Grewia occidentalis and Coddia rudis.

Geology & Soils:

Acid, leached heavy soils are derived from Karoo Super group sediments (including significant Dwyka tillites) and intrusive Karoo dolerites.

Climate:

Summer rainfall with some rain in winter. Droughts occasional. MAP about 750 to 780 mm. Frost infrequent, occurring mainly where cold air becomes trapped in valleys.

Mean monthly maximum and minimum temperatures for Melmoth 37.0 °C and 4.9 °C for October and July, respectively. Corresponding values for New Hanover 38.2°C and -0.2 °C for January and June respectively.

Remarks:

Herbaceous species richness is much less in Dry Coast Hinterland Grassland compared with the adjoining vegetation units KwaZulu-Natal Sandstone Sourveld; Moist Coast Hinterland Grassland; Midlands Mistbelt Grassland and relatively few of its common species are shared with these.

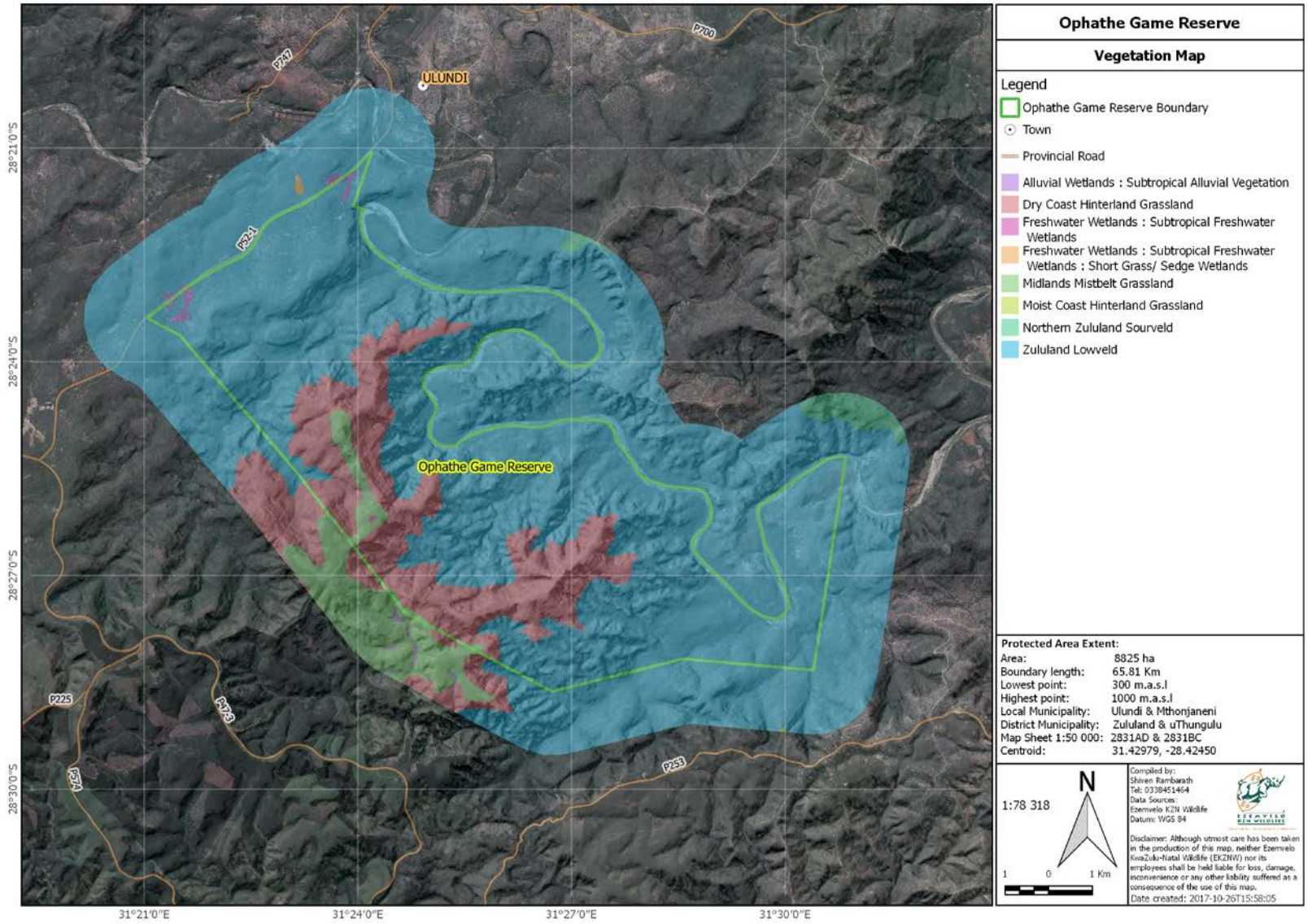
3.9.6.5 Zululand Lowveld

Distribution:

KwaZulu-Natal Province, Swaziland and Mpumalanga Province: Main extent from around Big Bend south to Mkuze, Hluhluwe, Ulundi to just north of the Ongoye Forest. An isolated patch is found on the Swaziland– Mpumalanga border. Altitude about 50–450 m.

Vegetation and Landscape features:

Extensive flat or only slightly undulating landscapes supporting complex of various Bushveld units ranging from dense thickets of Dichrostachys cinerea and Acacia species, through park-like savanna with flat-topped A. tortilis to tree dominated woodland with broadleaved open Bushveld with Sclerocarya birrea subsp. caffra and A. nigrescens. Tall grassveld types with sparsely scattered solitary trees and shrubs form a mosaic with the typical savanna Thornveld, Bushveld and thicket patches.



Map 7: Vegetation of Ophathe Game Reserve

3.9.7 Fire Regime

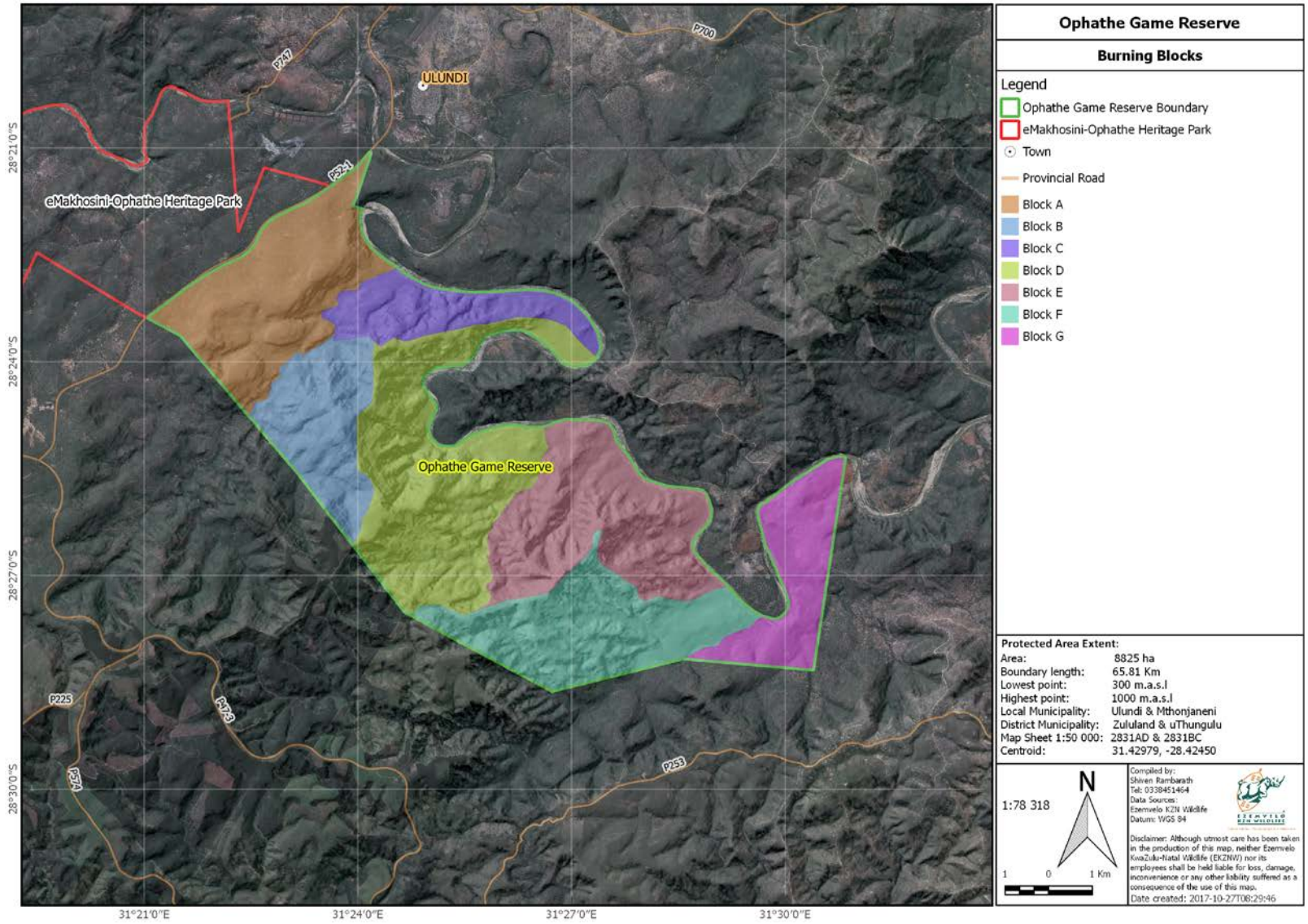
Fire, both "natural" (mainly lightning) and man induced, is thought to have played a major role in the development of the reserve's vegetation. While the specific objectives of burning are clear, the general aim of this programme is to allow natural processes to take place where practical.

The following have been extracted from the temporary Fire Management Plan for Ophathe Game Reserve. See Appendix J for the full management plan.

The Ophathe Game Reserve receives between 680-850mm of rainfall per year and is predominantly Zululand Lowveld vegetation type, with a smaller component of Hinterland grassland on the crests of the hills. Fire is a major driver in savanna systems, which in mesic systems such as this remains the major controller of the tree-grass ratio when combined with herbivores. EOHP is currently underutilized in terms of game production; the stocking density estimated in 2013 was calculated at approximately 30 percent of the estimated carrying capacity. This vegetation type is similar to that found throughout iMfolozi Nature reserve and can stock much higher densities of game. If low game densities continue and fire is excluded it can be expected that the reserve will become more wooded in time as it approaches climatic potential. Fire as a management tool can be used to counteract thickening and should be used to ensure maximum population growth of ungulate populations.

Historically, fire management at OGR was based on expert opinion; a system of pre- and post-fire inspections in which areas were identified to be burned based on biomass and year on year objectives. The long term goal is to tend toward a point where there is an adaptive management/ evidence based conservation approach to fire management at Ophathe Game Reserve. This is however not logistically feasible at present; therefore a 2-3 year rotational burn policy will be implemented. Although somewhat rigid this allows for targets to be set and implemented year on year, while allowing for some adaptation in the years to come. The approach allows for time to address strategic level issues within the Ezemvelo- AMAFA relationship while still ensuring basic fire management.

The temporary fire management plan will need to be revised into a final management plan for the reserve.



Map 8: Fire management blocks of Ophathe Game Reserve

3.9.8 Invasive Species

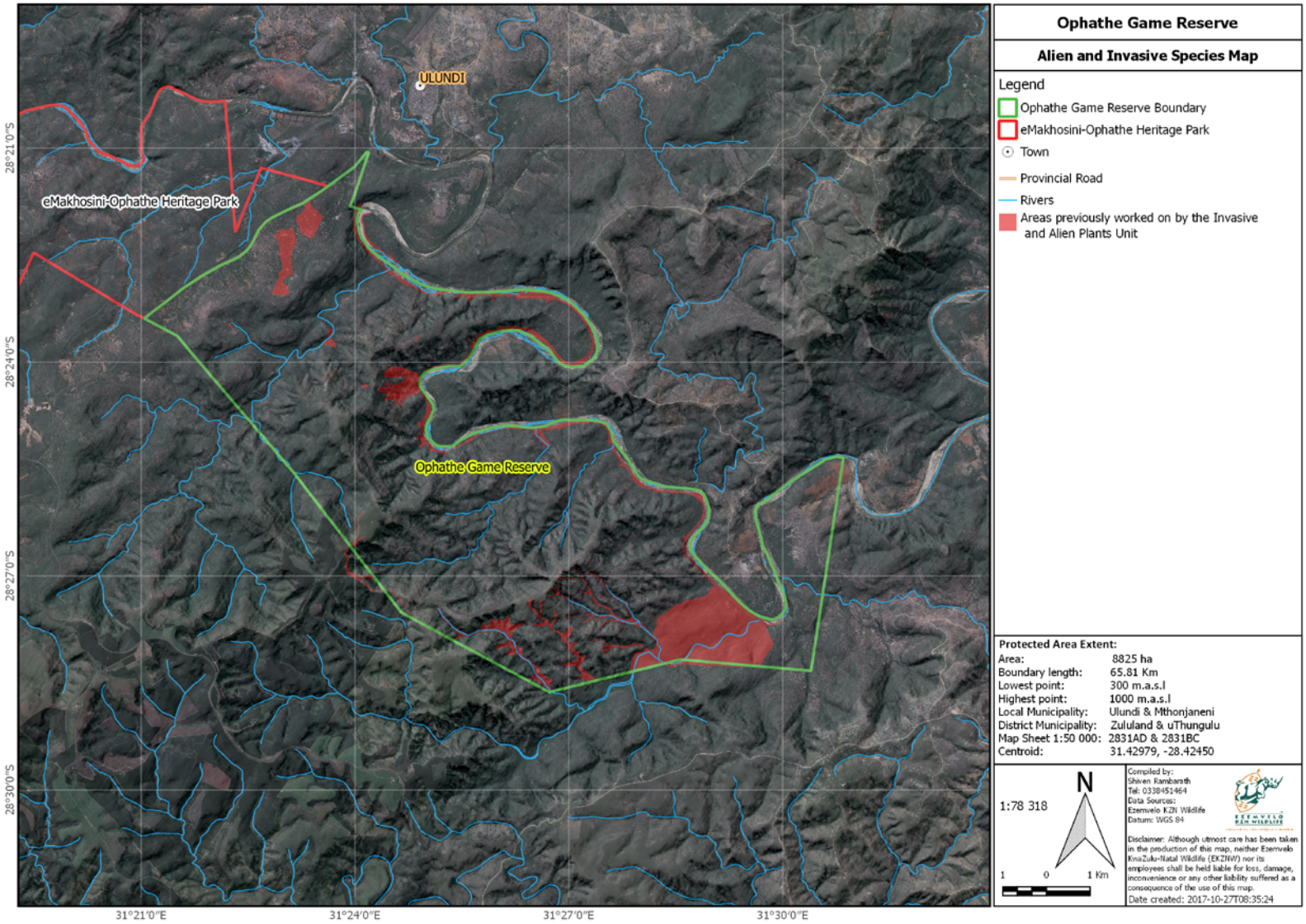
A listed invasive species means any species, which is listed in terms of section 70 of the Biodiversity Act, whose establishment and spread occurs outside of its natural distribution range. Such plants are considered to be a serious threat to the ecological functioning of natural systems and to water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

- Invasive plant control will require an ongoing programme that prioritizes key infestations along water courses, drainage lines and upper catchment areas.
- Initial clearing efforts should focus on containing infestations that are most likely to spread into new areas.
- All follow-up requirements must be strictly adhered to otherwise the problem will be exacerbated.
- Strategic partnerships and poverty relief programmes such as the Working for Water programme should be utilized in controlling invasive plants.
- The purpose of control is to eradicate plants that are alien to the area and to prevent further infestations by them.
- Priority should be given to invasive species that have the capacity to displace indigenous vegetation. These should be prevented from becoming established where possible (rather than waiting until their numbers have increased).
- Strict follow-up scheduling is the key to success. For this reason it is imperative that planning over the medium to long term (depending upon the species) is undertaken.

It is evident that there is a problem with alien plant infestations in disturbed areas especially where management infrastructure is located. The White IMfolozi River also acts as a primary mode of transportation to bring in alien invasive plants as indicated by Map 9.

Ophathe Game Reserve is currently experiencing problems with *Chromolaena odorata, Ricinus communis, Opuntia ficus-indica, Lantana camara, Melia azedarach and Acacia mearnsii.*

The plant *Parthenium hysterophorus* is becoming a threat to the reserve. Currently, this alien plant does not occur within the reserve but areas outside of the reserve are slowly being taken over. The plant is described by an herbaceous plant that can grow up to an average of 1.5metres tall. The stems and leaves are covered in short hairs with the leaves being pinnately lobed with a longitudinally grooved stem. Small white flowers are borne in compact heads which are about 5mm in diameter.



Map 9: Alien species distribution in Ophathe Game Reserve

3.9.9 Mammalian Fauna

There are no known endemic animals to the Park. The importance of the Park in terms of the conservation of animal's species stems from the large area and the altitude range. A variety of game species have been introduced into the Ophathe section of the EOHP since its proclamation in 1991.The following game species have been re-introduced, or alternatively, were resident in the area.

- Rhino, White (*Ceratotherium simum simum*) - Introduced
- Rhino, Black (*Diceros bicornis minor*) - Introduced
- Buffalo (*Syncerus caffer caffer*) - Introduced & removed due to suspected corridor disease
- Blue Wildebeest (*Connochaetes taurinus taurinus*) - Introduced
- Eland (*Tragelaphus oryx oryx)* - Introduced
- Kudu (*Tragelaphus strepsiceros strepsiceros*) - Introduced
- Giraffe (*Giraffa camelopardalis capensis)* - Introduced
- Zebra (*Equus quagga antiquorum*) - Introduced
- Waterbuck (*Kobus ellipsiprymnus ellipsiprymnus*) - Introduced
- Nyala (*Tragelaphus angasii*) - Migrated
- Impala (*Aepyceros melampus melampus*) - Introduced
- Warthog (*Phacochoerus africanus*) - Introduced
- Bushbuck (*Tragelaphus scriptus*) - Original population
- Mountain Reedbuck (*Redunca fulvorufula fulvorufula*) - Original population
- Steenbok (*Raphicerus campestris*) - Original population
- Klipspringer (*Oreotragus oreotragus transvaalensis)* - Original population
- Grey duiker (*Sylvicapra grimmia*) - Original population
- Baboon (*Papio hamadryas*) - Original population
- Spotted hyena - Original population
- Rock Hyrax - Introduced.

A single Black Rhino, initially introduced to the Ophathe Game Reserve in 1998, and a further population of 5 were introduced in 2000, of which one died, probably of wounds received during a territorial dispute. Two calves were born in 2000 bringing the total population to seven animals. At the moment, there are no Black Rhino present.

An introduction program for white rhino got underway in 2001 when 4 animals were introduced with a further 6 animals being introduced during 2002. This population still faces pressure from poaching and numbers are still low.

A total of 30 disease free Buffalo were introduced from Itala during 2005. Due to allegations of transmission of corridor disease, the animals were all culled in 2009 at which stage they had bred to 49.

Appendix G indicates the mammal species list for Ophathe Game Reserve.

3.9.10 Avifauna

A wide variety of bird species occur within the Park. The rugged terrain and the presence of cliffs provide suitable breeding habitats for many raptor species. The reserve forms part of the Zululand Birding Route.

The Southern Ground-Hornbill (*Bucorvus leadbeateri*), Cape Vulture (*Gyps coprotheres*), Martial Eagle (*Polemaetus bellicosus*) and African Marsh-Harrier *(Circus ranivorus*) have been listed as Endangered and do occur in the reserve.

The White-backed Vulture (*Gyps africanus*), Cape Vulture (*Gyps coprotheres),* White-headed Vulture (*Trigonoceps occipitalis*) and Lappet-faced Vulture (*Torgos tracheliotus)* does not reside in the reserve but have been observed to fly in from Hluhluwe iMfolozi Park (HIP) where breeding colonies are resident.

Appendix G indicates the bird species list for Ophathe Game Reserve.

3.9.11 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.

Ophathe Game Reserve provides a suitable habitat for a number of amphibians and reptiles such as the Painted Reed Frog (*Hyperolius marmoratus*), Water lily Frog (*Hyperolius pusillus*) and Bubbling Kassina (*Kassina senegalensis*) which are listed as least concern on the IUCN list but are endemic to Africa.

The Leopard tortoise (*Stigmochelys pardalis*) and the Kwazulu-Natal hinged-back tortoise (*Kinixys natalensis*) can also be found in the reserve

Appendix G indicates the reptile and amphibian species list for Ophathe Game Reserve.

3.9.12 Invertebrates

Invertebrate fauna constitutes the greatest component of species diversity in natural systems but it is often poorly understood while their role 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 the most important management intervention required with habitat loss being the biggest threat to their survival.

The Silver-barred Charaxes (*Charaxes druceanus druceanus*) and Ngome earthworm (*Spialia depauperata australis*) can be found within the reserve. These species are restricted and endemic to Kwazulu-Natal.

The Mrs Raven's Flat (*Calleagris kobela*) butterfly, the Rainforest Brown (*Cassionympha cassius*) and Swanepoels Copper (*Aloeides swanepoeli*) is endemic to South Africa and are present within the reserve.

Appendix G indicates the Invertebrate species list for Ophathe Game Reserve.

3.10 OPERATIONAL MANAGEMENT CONTEXT OF OPHATHE GAME RESERVE

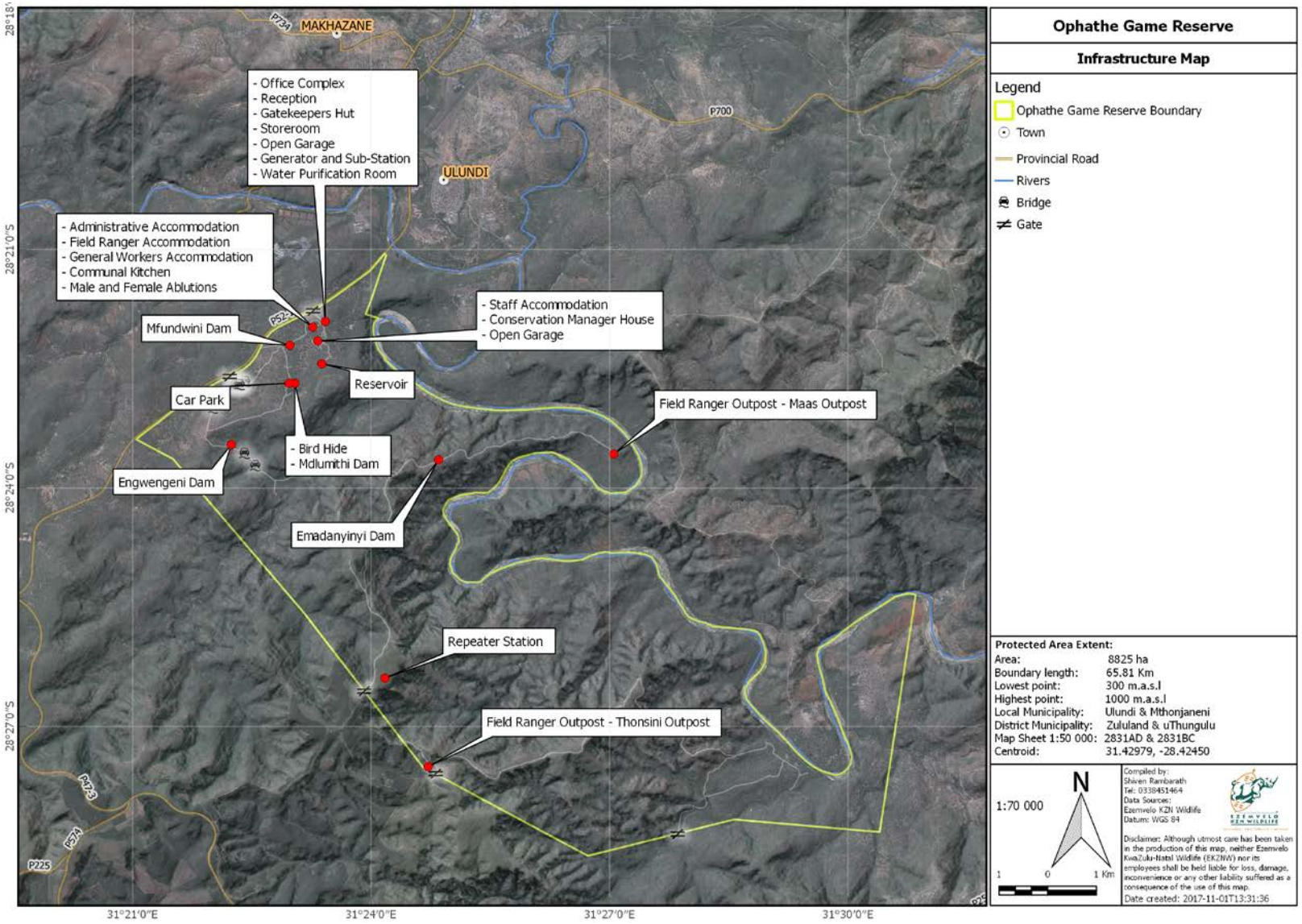
3.10.1 Infrastructure

The Ophathe Game Reserve is fully fenced with a Bornox type fence for the full 46km. There are 11 gates throughout the perimeter of the reserve with 28.2km of roads. Some roads have not been maintained, making certain arears only accessible by 4x4.

Power is supplied by Eskom to the various park infrastructure.

Water is supplied via a 3.75KW pump which is installed in a well on the banks of the White Umfolozi. This pumps water via 50mm galvanised steel and (later) polythene pipes to a water filtration plant at the Vali stores. Here water is flocculated, filtered and chlorinated before being pumped to a 50000l storage reservoir to supply the Vali administrative and accommodation complexes

The map below, list all infrastructure at the reserve.



Map 10: Infrastructure of Ophathe Game Reserve

3.10.2 Staffing Establishment

Ophathe Game Reserve has 42 permanent staff members with a total of 11 vacant positions.

The reserves staff compliment comprises of the following:

- 1 x Park Manager
- 1 x Section Ranger
- 1 x Admin Officer
- 3 x Principle Field Rangers
- 3 x Senior Field Rangers
- 1 x Handyman
- 1 x Heavy Duty Driver
- 3 x Fence Liners
- 19 x Field Rangers
- 1 x labour Supervisor
- 1 x Store Attendant
- 4 x General Assistants
- 1 x Maintenance Assistant
- 1 x office Cleaner

The following positions are currently vacant:

- 1 x Duty Ranger
- 1 x Section Ranger
- 1 x Principle Field Ranger
- 1 x Senior Field Ranger
- 3 x Fence Liners
- 1 x Field Ranger
- 3 x General Assistants

3.10.3 Funding Levels at Ophathe Game Reserve

The management effectiveness assessment conducted by Carbutt and Goodman in 2010 indicated the funding levels at the Ophathe Game Reserve to have an operational budget of R69.35 per hectare and a total operational budget of R616 539.00.

The reserve now operates on an annual budget of R 397 857, which would reduce the Rand per hectare value up to R 45.10 per hectare.

The total budget for the reserve is used on the Emakhosini side as well. The Reserve does not receive any additional funding.

Appendix H contains the financial plan for Ophathe Game Reserve.

3.10.4 Management Effectiveness in Ophathe Game Reserve

As with all Ezemvelo protected areas, the intention is to continually improve management effectiveness of protected areas in line with the levels adopted for all protected areas within the KZN protected area network. In 2010 Ezemvelo KZN Wildlife conducted management effectiveness assessments for all of its protected areas (Carbutt & Goodman, 2010) and these assessments have subsequently been done on an annual basis. Management effectiveness assessments consider protected area design, the appropriateness of management systems and processes, and delivery of protected area objectives. These assessments assist with the following:

- Promote adaptive management
- Improve project planning
- Promote accountability

Such assessments are intended to enable conservation organisations to refine their strategic, system-wide responses to the most pervasive threats and management weaknesses (Carbutt & Goodman, 2010). They are not performance assessments of individuals but serve to reflect an organisation's proficiency for protected area management as a whole. The assessments for Ophathe Game Reserve are peer reviewed and evidence based.

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

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

The 2010 results revealed OGR to have a management effective score of 53%. This score was below the minimum required score of 67% for Ezemvelo KZN Wildlife PA's and so issues were identified that needed to be reformed in order to reach the minimum requirement and improve the management effectiveness of OGR.

The reserve scored 76.16% in the 2014/2015 management effectiveness assessment which shows an improvement from 2010, however the 2015/2016 Management Effectiveness scored dropped to a poor 47.06%. This drastic drop in score could have been due to a change in the Management Effectiveness questionnaire and protocols.

3.10.5 Risk assessment

Pressures and threats (Ervin, 2003) are defined as follows:

Pressure: a force, activity, or event that have already had a detrimental impact on the integrity of the protected area over the past five years. Threat: potential or impending pressures in which a detrimental impact is likely to occur or continue to occur in the future, over the next five years.

Table 4 indicates the Pressures, threats and management issues identified through the assessment of Ophathe Game Reserve updated by the protected area planning committee.

Table 3: Management effectiveness assessment - Pressures, threats and issues

PRESSURES AND THREATS	MANAGEMENT ISSUES
Poaching	The protected area is only partially buffered.
Disease	Municipal IDPs have not taken the relevant aspects of the MP into account.
Climate change (Droughts, flooding, habitat alteration)	Lack of financial and human resources
Bush encroachment	Poor condition of roads
Man-induced soil erosion	Illegal entry into the reserve for grazing
PA isolation	
Arson/ uncontrolled fires	
Invasion of Alien Plants and Animals	

Figure 4 indicates the six elements of protected area management and its indicators as per the IUCN METT guidelines that forms the basis for SA METT 3. PA managers should familiarise themselves with these elements and indicators and should be able to back up the assessment of their PA with acceptable evidence. Ezemvelo together with all other national and provincial conservations agencies have implemented the standard SA METT 3 in 2016.

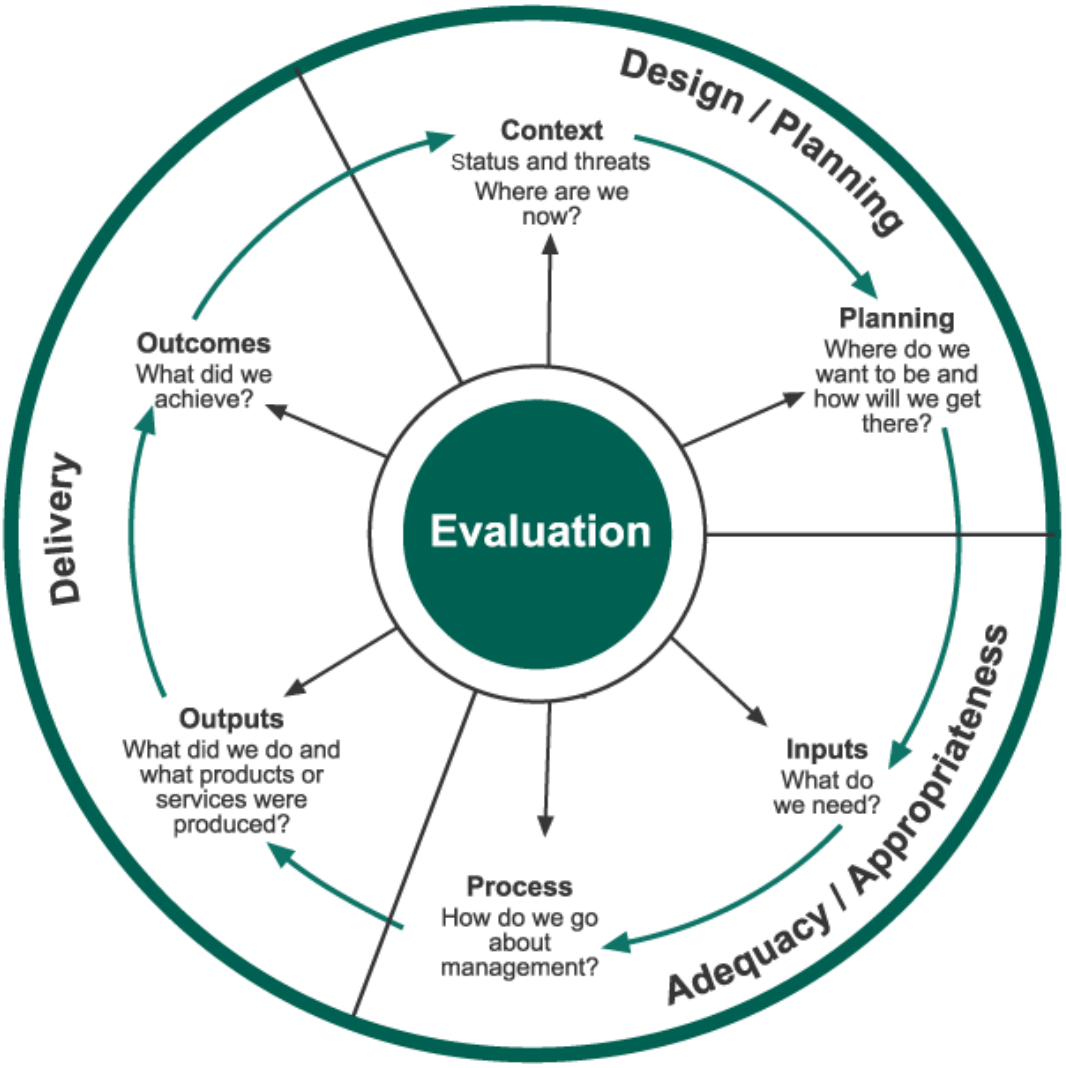


Figure 3: Management cycle - IUCN framework for evaluating management effectiveness in protected areas

3.11 SUMMARY OF MANAGEMENT ISSUES – STRENGTHS, WEAKNESSES OPPORTUNITIES AND THREATS (SWOT)

Figure 5 provides a summary of key management issues, strengths, weaknesses, opportunities, and threats which will be addressed through this management based on the descriptions and issues highlighted in the sections above.

STRENGTHS

- Protection of threatened species and biomes are intact.
- Provision of ecosystem goods and services.
- Protection of cultural-heritage sites.
- PA is in close proximity to the Ulundi Airport.
- Provides a sense of place.

WEAKNESSES

- Dilapidated roads.
- Incidents of poaching.
- Incidents of Arson fires.
- Low water resources – during time of drought.
- Infestation of alien plants in reserve.
- Access control and illegal entry of people (grazing and poaching).
- Lack of financial and human resources.
- Inadequate staff accommodation.
- Poor interaction with communities.
- Poor management of Cultural-Heritage sites.

OPPORTUNITIES

- Eco-tourism development opportunities e.g. 4x4 destination, trails, game drives, mountain biking and rustic accommodation.
- Creation of employment opportunities for the surrounding communities – through alien plant clearing programme.
- Continual protection of Cultural-heritage sites.
- Research opportunities – Effects of certain animals on surrounding plantations.
- Increased working relationships between Ezemvelo KZN Wildlife and the Private Sector.
- Increased opportunities for Protected Area Park Expansion
- Biodiversity economy node

THREATS

- Low level of financial and human resources.
- Encroaching developments on the periphery of the protected area.
- Entry of Alien plant infestations from surrounding areas.
- Litter and pollution from activities outside of the Protected Area.

4 STRATEGIC MANAGEMENT FRAMEWORK

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

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

4.1 OPHATHE GAME RESERVE VISION

"To contribute to biodiversity conservation, sound resource management, protection of historical and cultural assets, while providing sustainable eco-tourism and to form the core of a consolidated conservation area through park expansion and Bio-economy Nodes with community support by a means of employment opportunities, environmental awareness and education."

4.2 OBJECTIVES AND STRATEGIC OUTCOMES

An objective has been identified for each of Ophathe Game Reserve key performance areas, which follow from the management challenges, issues and opportunities, and relate to the important functions and activities necessary to protect, develop and manage it effectively. The objectives have then been translated into strategic outcomes, which form the basis for the management activities and targets set out in the operational management framework, described in Section 6 below. Table 5 sets out the key performance areas, the objective for each key performance area and the strategic outcomes, required to realise the objectives.

Table 4: Objectives and strategic outcomes for Ophathe Game Reserve

KEY PERFORMANCE AREAS	OBJECTIVES	STRATEGIC OUTCOMES
Legal Compliance and Law Enforcement	Comply with and enforce legislation pertaining to the protection, development and management of Ophathe Game Reserve.	▪ Ensure that the full extent of the PA is appropriately demarcated. ▪ Ensure that there is adequate law enforcement at the Ophathe Game Reserve. ▪ Ensure effective control of legitimate access points in to Ophathe Game Reserve.
Stakeholder Engagement	Enable and maintain effective stakeholder relations through communication and collaboration.	▪ Constructive interaction and co-operation with community, neighbours and stakeholders. ▪ Ensure as far as possible that the Ophathe Game Reserve enjoys public support.
Buffering Mechanisms & Regional Management	Protect the biodiversity and cultural assets of Ophathe Game Reserve by promoting compatible Land-use, activities and water-use in areas surrounding the protected area.	▪ Ensure that the size of the Ophathe Game Reserve is sufficient to achieve its management objectives. ▪ Implementation of protected area expansion opportunities, where feasible and in-line with Ezemvelo Policies. ▪ Determination of the buffer zone / zone of influence requirements around the Ophathe Game Reserve. ▪ Ensure that water-use planning and Land-use planning take cognisance of the Ophathe Game Reserve objectives.
Environmental Education & Awareness	Actively promote an understanding and appreciation of the values of Ophathe Game Reserve.	▪ Implement an effective Environmental education and awareness programme linked to the objectives of Ophathe Game Reserve and focussed on the surrounding communities and neighbours.
Eco-tourism Management & Development	Maintain sustainable nature based eco-tourism in Ophathe Game Reserve to provide a high quality visitor experience whilst promoting the natural and cultural values of the protected area.	▪ Ensure that all current eco-tourism infrastructure are maintained. ▪ Determination of an eco-tourism market profile, through eco-tourism market research for the Ophathe Game Reserve.

KEY PERFORMANCE AREAS	OBJECTIVES	STRATEGIC OUTCOMES
		▪ Implementation of outcomes determined through the feasibility study.
Biodiversity Resource & Conservation Management	Protect the ecological integrity of Ophathe Game Reserve through active interventions based on principles of adaptive and ecosystem based management.	▪ Maintenance of the Ophathe Game Reserve Fire Management Plan. ▪ Adequate fire safety within the Ophathe Game Reserve is ensured. ▪ Development of an invasive species control plan for the protected area. ▪ Clear all invasive plant infestations in the protected area. ▪ Implementation of procedures to identify, rehabilitate and manage areas that have been significantly impacted by soil erosion. ▪ Implementation of procedures to manage alien animals found within the protected area. ▪ If extractive resource use is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy. ▪ If bioprospecting is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy. ▪ Develop and implement a strategy for the introduction and management of wildlife into the protected area in accordance with Ezemvelo KZN Wildlife policies. ▪ Development and implementation of a strategy for human/wildlife conflict. ▪ Ensure that there is sufficient information and understanding of biodiversity in Ophathe Game Reserve to inform and support the achievement of specific biodiversity objectives. ▪ Processes are established to determine success of management interventions in protecting the ecosystems, communities and species of the protected area.

KEY PERFORMANCE AREAS	OBJECTIVES	STRATEGIC OUTCOMES
Cultural Heritage Resource Management	Ensure the protection and public appreciation of all cultural and heritage resources within the Ophathe Game Reserve in accordance with statutory requirements.	▪ Ensure the protection and the improved awareness of the cultural heritage resources and values of Ophathe Game Reserve.
Operational Management	Provide adequate human resources, equipment, infrastructure and funding to enable the effective protection, development and management of Ophathe Game Reserve.	▪ Development and implementation of a five-year financial plan that identifies the resource needs to achieve the objectives for the protected area. ▪ Ensure that there is an effective staff management programme in place. ▪ Ensure that the protected area is compliant with the Occupational Health and Safety Act No 85 of 1993. ▪ Ensure that facilities and infrastructure in the protected area are adequately maintained.

4.3 CONSERVATION DEVELOPMENT FRAMEWORK

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

General principles of zonation:

- There is a general gradation in the zonation categories ranging from high to low protection.
- An overlay zone provides additional protection and may be overlaid onto another zone in order to strengthen the protection e.g. Key Feature Protection Zone.
- A node is an area where eco-tourism, management and service infrastructure can be developed and that has a specified footprint.
- The Wilderness Zone will be buffered by the Low Use Zone.
- Where possible both management and eco-tourism infrastructure should be developed outside the protected area.
- Development of infrastructure should preferably be on the periphery of the zone towards a higher impact/less sensitive adjacent zone.
- Deviations or exceptions in any zones require approval from the management authority. (Operations Committee level)
- Any activities permitted in a category of higher protection are also permitted in a category of lower protection, e.g. activities permitted in the Low Use Zone can also be permitted in the Moderate Use Zone.

All activities and/or developments that take place must be in accordance with the legislative framework, Ezemvelo KZN Wildlife policies, norms and standards and the local protected area rules and regulations.

4.3.1 Zonation Plan

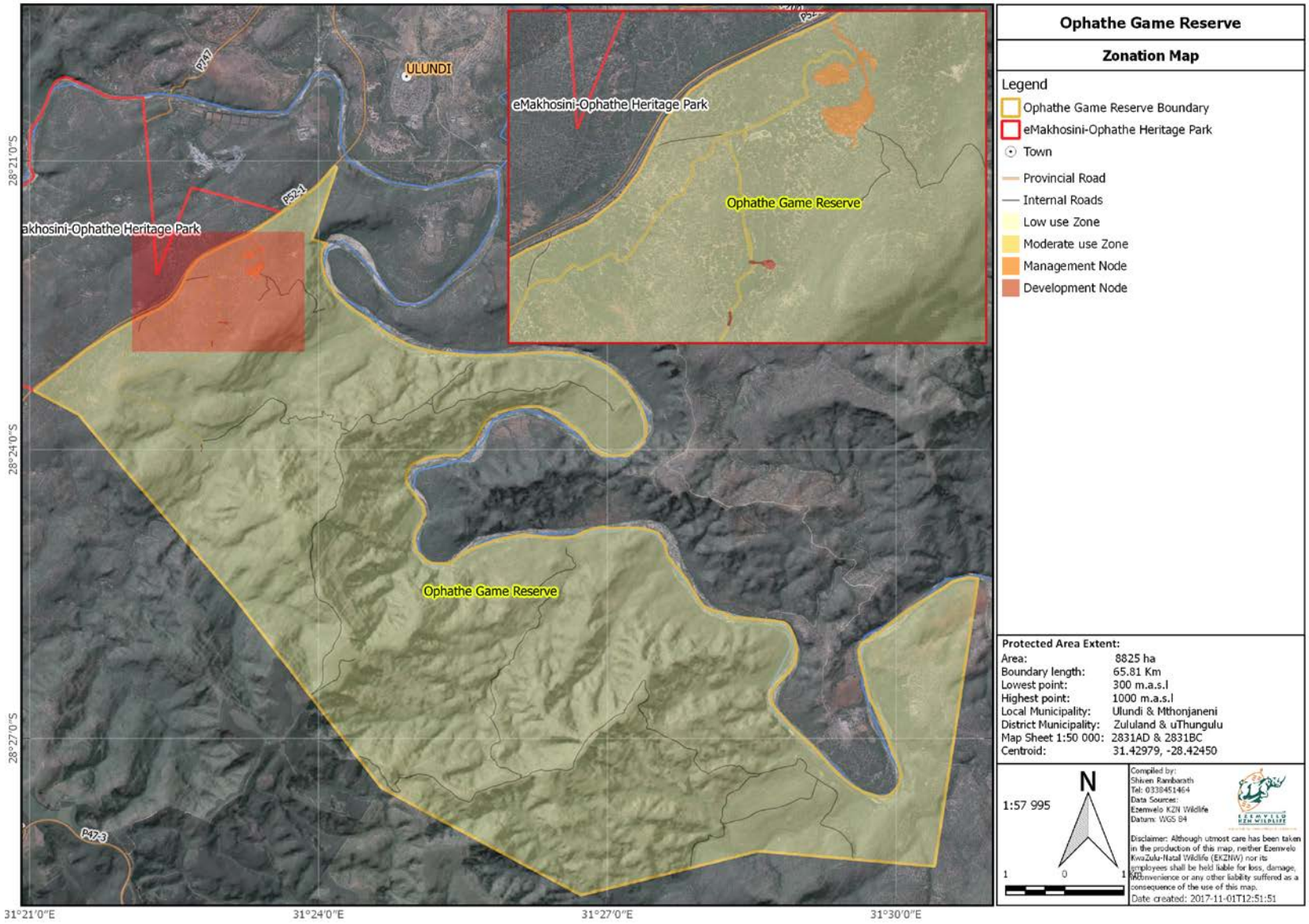
The purpose of zonation within a protected area is to identify types and levels of usage that are acceptable, based on an area's sensitivity and resilience, and to manage visitor experience and inter-user conflict. Zonation is used to identify areas in which infrastructure and/or activities may be located or take place.

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, from pristine wilderness to higher intensity nature-based uses. 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.

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 eco-tourism objectives for the protected area.

Not all zonation categories have been applied in determining the system of zonation for Ophathe Game Reserve, as some are not appropriate to it.



Map 11: Zonation of Ophathe Game Reserve

Table 5: Zonation categories for Ophathe Game Reserve

Low use zone	
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 coeca-tourism principles of low human impact will prevail. The zone also serves as a buffer to the wilderness zone.
Objective	To designate an area for eco-tourism experiences and management activities that are focused primarily on low impact activities and where general sensitivity requires that management and eco-tourism impacts on the natural landscape should be mitigated.
Activities and infrastructure	▪ Facilities of a rustic nature such as small bush camps, rustic overnight hiking huts, hides and trails. ▪ Motorized access is low-key and 4 x 2 access is provided to points where trails start or to tourist facilities. ▪ 4 x 4 tracks are allowed in this zone (limit to number of tracks and frequency of use) as per site specific rules and regulations. ▪ Hiking and formalised trails. Management activities must focus on protecting park resources and core values. ▪ Limited management roads and tracks.
Constraints and implementation	▪ Activities are mostly low impact and low density. ▪ No modern facilities such as restaurants and shops are permissible in this zone. ▪ Where possible, facilities should be developed on the periphery of the zone towards the less sensitive adjacent zone.
Moderate use zone	
Description	An area where natural processes and the landscape may be altered to support protected area operations. 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.
Objective	To designate an eco-tourism area that is primarily focused on visitor experience while still securing the values of the protected area and an area that serves the operational and support functions of the protected area.
Activities and infrastructure	▪ Management roads and tracks. ▪ Management activities are directed to maintaining park infrastructure for biodiversity conservation, park operations, equipment and material storage. ▪ Hiking on formalised trails. ▪ Infrastructure is accessible by motorised access. ▪ The eco-tourism road network including access roads and game viewing roads. ▪ Traditional game viewing routes with associated more formalised infrastructure. ▪ Infrastructure is accessible by motorised access.
Constraints and implementation	▪ Within the moderate use zone a specific **Eco-tourism Development Node** will be defined which could include areas of commercial use. ▪ Where possible this node should be outside the protected area. ▪ The node should preferably be on the periphery of the Moderate and Low Use Zones, to ensure a quality visitor experience in the lower use zone but with the bulk of the impact e.g. access roads and services in the higher use zone. ▪ This node should be developed in the less sensitive part of the Moderate Use Zone. ▪ The Eco-tourism Development Node can only be developed in areas where it does not compromise the values of the protected area. ▪ The node must have a specified footprint.

	▪ Examples of developments in an Eco-tourism development node include picnic areas, camping sites and interpretation centre. ▪ **Park Administrative Node** (within the Moderate use zone) caters for facilities such as staff accommodation, administrative offices, other operational required infrastructure, waste handling sites etc. ▪ 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. ▪ The node must have a specified area as a footprint.
Protected Area buffer zone / Zone of influence	
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.
Objective	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. To influence land use adjacent to the protected area to manage external pressures and threats that may threaten its values and objectives.
Activities and infrastructure	The Park management must define these activities in terms of its specific values and objectives and taking into consideration the following: ▪ Alien and invasive species management ▪ Pollution control and prevention ▪ Impact on sense of place ▪ Habitat fragmentation and isolation ▪ Water resource protection ▪ Human/ Wildlife conflict ▪ Climate change adaptation ▪ Compatible land use ▪ Priority species management
Constraints and implementation	It is desirable for the intensity of land use to decrease closer to the protected area. Activities that are not compatible with the adjacent protected area zonation must be discouraged. Management activities will focus on: ▪ Strategically promoting and monitoring compatible Land-use and land-care on adjacent lands and upstream catchments ▪ Integrated alien species control ▪ Biodiversity stewardship and environmental awareness ▪ Working collaboratively with neighbours to secure sensitive sites that contribute to the protection of values and objectives of the protected area. ▪ Influencing and input into the municipal and regional planning tools such as SDFs, Schemes, IDPs and Bioregional Plans. ▪ The Buffer should spatially reflect the 5 km border of listed activities as per National Environmental Management Act No. 107 of 1998 Notice 3 of 2010.

4.4 ADMINISTRATIVE STRUCTURE

A recommended organisational structure for Ophathe Game Reserve is set out in Figure 6. The figure represents the staff complement and positions that are required to enable the effective operation, management and protection of Ophathe Game Reserve.

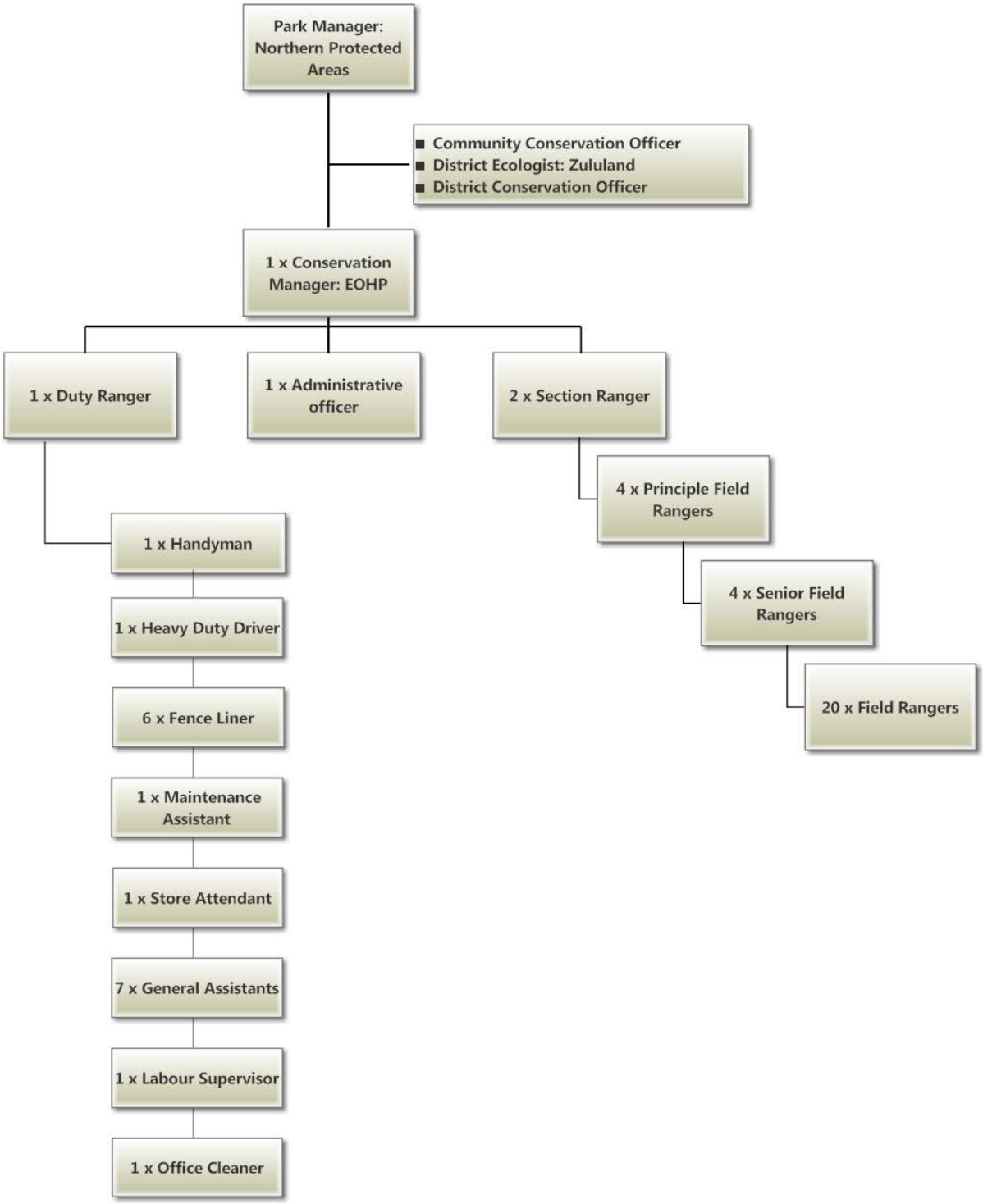


Figure 4: Organisational structure for Ophathe Game Reserve

5 OPERATIONAL MANAGEMENT FRAMEWORK

This section translates the strategic management 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.

Areas that are shaded light grey indicates operational sections that relate to the METT assessment and implementing these sections of the Operational Management Framework should lead directly to an improvement of the METT score for the Ophathe Game Reserve.

5.1 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 Ophathe Game Reserve.
Priority 2:	A management target that addresses an aspect of management that contributes towards community involvement and support for the conservation of Ophathe Game Reserve, which is a key principle of effective protected area management.
Priority 3:	A management target that indirectly contributes towards the protection of biodiversity or the development of social and/or economic benefits and opportunities for Ophathe Game Reserve and/or its surrounding local communities.

5.2 LEGAL COMPLIANCE AND LAW ENFORCEMENT

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

- All reasonable efforts must be made to ensure the effective conservation of biodiversity within and on the boundaries of the protected area.
- 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 protected area will be undertaken through surveillance, monitoring and appropriate reaction in the event of an offence.
- Managers should familiarise them with all relevant legislation and legal agreements and apply this to their management actions

Table 6: Framework for Legal Compliance and Law Enforcement

LEGAL COMPLIANCE AND LAW ENFORCEMENT						
Strategic Outcome	**Management Activities**	**Management Target**	**Target Indicator (Evidence)**	**Indicators of Concern**	**Priority**	**Responsibility**
Ensure that the full extent of the PA is appropriately demarcated.	▪ Erect and maintain signage to ensure sufficient demarcation at all entry gates. ▪ Upgrade/ erect fencing at all; areas with damaged or missing fence.	▪ Appropriate demarcation of boundaries in Ophathe Game Reserve. ▪ Maintenance of existing fence.	▪ PA map. ▪ Signage at main access areas. ▪ Fence specifications and monitoring reports (MPR)	▪ Damaged Fenceline. ▪ Lack of financial and human resources to maintain fence.	**Year 1**	Section ranger and Conservation manager
Ensure that there is adequate law enforcement at the Ophathe Game Reserve.	▪ Develop and implement an integrated security strategy (Integrated Compliance Plan) for the Ophathe Game Reserve, which ensures collaboration with all relevant institutions.	▪ Creation of cooperative structures with local communities and law enforcement officials. ▪ Informant networks. ▪ Co-ordinated security efforts.	▪ Minutes and attendance registers of meetings of cooperative structures. ▪ Integrated Compliance Plan.	▪ Ad hoc security measures that are not integrated into the broader security strategies and programmes.	Year 2	Conservation Manager
	▪ Develop and gazette internal rules for controlling use & activities in Ophathe Game Reserve.	▪ Compliance with NEMPAA in terms of gazetting of internal rules that will facilitate effective law enforcement.	Copy of Gazette Notice for internal rules.	▪ Lack of control of use & activities in Ophathe Game Reserve.	Year 5	Planning Department
	▪ Ensure that there is sufficient law enforcement capacity	▪ Capacitated work force that can fulfil the	▪ Organogram. ▪ Asset register	▪ PA management lacks the capacity or is constrained	Ongoing	Conservation Manager with

LEGAL COMPLIANCE AND LAW ENFORCEMENT						
Strategic Outcome	**Management Activities**	**Management Target**	**Target Indicator (Evidence)**	**Indicators of Concern**	**Priority**	**Responsibility**
	including staff numbers, skills, equipment and support.	organisation's mandate in terms of law enforcement.	▪ Skills audit ▪ Occupational health and safety file ▪ Training records	by limited capacity to enforce the law in keeping with the organisation's mandate		relevant regional and support services staff
	▪ Regular patrols covering the full extent of the Ophathe Game Reserve ▪ Prosecution of any offender caught committing an offence (make provision for people under the legal age such as children)	▪ Legal protection of the full extent of Ophathe Game Reserve in terms of NEMPAA	▪ Park specific rules ▪ Standard Operating Procedure ▪ Patrol book/reports ▪ Occurrence book records ▪ Fire records (arson fires) ▪ Incident reports	▪ Increase or frequent recovery of snares ▪ Increase in security breaches ▪ Recorded losses of game species and/or losses of rare and endangered plants ▪ Increase in arson fires	Ongoing	Conservation Manager
Ensure effective control of legitimate access points in to Ophathe Game Reserve.	▪ Compile a servitude register of all servitudes and their specific conditions for Ophathe Game Reserve	▪ Enforcement of conditions of relevant servitudes by Ophathe Game Reserve staff	▪ Register / copy of servitudes and their conditions on station	▪ Lack of knowledge of PA staff or servitudes and their conditions and therefore lack of enforcing these correctly	Year 1	Conservation Manager and planning
	▪ Develop and implement Standard Operating Procedures /Station orders for gate access and control ▪ Ensure staff is capacitated to control protected area access ▪ Maintain access control records ▪ Maintain a key register for Ophathe Game Reserve	Effective control measures for protected area access	▪ Standard operating Procedures / Station orders ▪ Gate records ▪ Records of the key register ▪ Occurrence books records	▪ Ineffective or partially effective control measures to control protected area access. ▪ Increase in illegal entry incidents.	Ongoing	Conservation Manager

5.3 STAKEHOLDER ENGAGEMENT

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

- Efforts should be made to ensure that the communities living around the protected area are aware of the role that it fulfils in biodiversity protection and the provision of ecosystem services to the region.
- Stakeholder engagement should be undertaken to engender a sense of ownership of the protected area, within the communities, and support for its biodiversity conservation objectives.
- A common understanding of the issues that affect both the protected area and the surrounding communities should be developed and efforts to resolve them should be undertaken cooperatively.

The detailed operational requirements for Stakeholder engagement are set out in Table 7 below.

Table 7: Framework for Stakeholder Engagement

STAKEHOLDER ENGAGEMENT						
Strategic Outcome	**Management Activities**	**Management Target**	**Target Indicator (Evidence)**	**Indicators of Concern**	**Priority**	**Responsibility**
Constructive interaction and co-operation with community, neighbours and stakeholders	▪ Identify/ update list of key neighbours and stakeholders of Ophathe Game Reserve ▪ Establish the Ophathe Game Reserve Advisory Forum (Traditional Authority forum) ▪ Facilitate regular constructive meetings with the Advisory Forum to facilitate input into the decision making process	▪ Key neighbours have been identified and there is a formalised programme of regular pro-active interaction between PA management and neighbouring land users ▪ The formal community forums provide a platform to raise concerns between both parties	▪ Updated list/database with contact details of key neighbours, communities and stakeholders ▪ Terms of reference of the Advisory Forum ▪ Advisory Forum meetings agendas and minutes ▪ Attendance register	▪ Neighbours, communities and stakeholders is not known to the protected area managers. ▪ No process is in place for engagement with key neighbours, communities and stakeholders.	Ongoing	Conservation Manager and Community Conservation Officer
Ensure as far as possible that the Ophathe Game Reserve enjoys public support	▪ Actively encourage support for the protected area through open communication channels and conflict resolution	▪ Public support	▪ Records of mitigating measures, meetings, minutes and attendance records, school outings, educational programmes	▪ The protected area is not supported by neighbours and public and there is antagonism towards the protected area management.	Annually	Conservation Manager and Community Conservation Officer, DCO
	▪ Facilitate an economic and social benefit assessment for Ophathe Game Reserve	▪ An objective assessment of social and economic benefits of Ophathe Game Reserve	▪ Social & economic benefit report for Ophathe Game Reserve	Economic and social benefit is unknown.	Year 4	Conservation Manager with Social Ecology Unit

5.4 BUFFERING MECHANISMS & REGIONAL MANAGEMENT

5.4.1 Protected area expansion and buffer zone / Zone of influence 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 protected area. In order to safeguard the biodiversity within the Ophathe Game 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. 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 protected area.
- Threatening processes and edge effects on the protected area's boundary and beyond it must be identified.
- Appropriate actions must be taken to manage threatening processes and edge effects on the protected area's boundary and beyond it.

5.4.2 Regional management

It is important, in managing the buffer areas around the protected area, that Ezemvelo KZN Wildlife work with local government authorities to ensure that their land use planning considers the biodiversity conservation imperatives of Ophathe Game Reserve. In this regard it is necessary to ensure that buffer zone considerations are captured in planning tools such as IDPs, SDF's and Land Use Management Schemes (LUMS). 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 protected area.
- 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 8 below.

Table 8: Framework for Buffering Mechanisms & Regional Management

Strategic Outcome	Management Activities	Management Targets	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
PROTECTED AREA EXPANSION						
Ensure that the size of the Ophathe Game Reserve is sufficient to achieve its management objectives	▪ Identify opportunities for protected area expansion / stewardship in areas surrounding Ophathe Game Reserve	▪ Expanding the size of the reserve	▪ Map and proclamation of expansion opportunities e.g. protected area expansion, stewardship agreements etc.	▪ The design of the protected area severely limits the achievement of the protected area objectives ▪ No expansion opportunities	Year 5	Conservation Manager with legal unit, Planning and Stewardship
Implementation of protected area expansion opportunities, where feasible and in-line with Ezemvelo Policies.	▪ Re-vitalise the Kwasanguye-Vriendschap-Ezemvelo-SAHGCA Partnership and initiative through a series of workshops and meetings. ▪ Develop a detailed proposal and concept for the Kwasanguye-Vriendschap-Ezemvelo-SAHGCA Partnership and initiative. ▪ Assess and evaluate the Kwasanguye land to determine its ecological viability for incorporation into Ophathe Game Reserve. ▪ Determine the requirements for the inclusion of the Kwasanguye land into Ophathe Game Reserve.	▪ Kwasanguye-Vriendschap-Ezemvelo-SAHGCA Partnership is re-vitalised and all partners are on the same level of understanding. ▪ A detailed proposal and concept for the Kwasanguye-Vriendschap-Ezemvelo-SAHGCA Partnership and initiative. ▪ Assessment and evaluation of the Kwasanguye land to determine its ecological viability for	▪ Minutes and Attendance register of workshops and meetings. ▪ A detailed proposal and concept document. ▪ An assessment report of the Kwasanguye land. ▪ Maps and Proclamation if area meets the requirements and is declared as a nature reserve. ▪ A document outlining the beneficiation model.	▪ Failing partnership between stakeholders. ▪ Improper planning before the project is initiated. ▪ Unknown ecological viability of the Kwasanguye land. ▪ Not following Ezemvelo Board Policies. ▪ No legal designation of the incorporated land. ▪ Kwasanguye community does not benefit from the project.	Year 5	Regional Manager, Conservation Manager, Legal Unit, Planning and Biodiversity unit, Stewardship, Eco-advice Unit, Kwasanguye, Vriendschap Boerdery, SA Hunters and Game Conservation Association (SAHGCA)

	▪ Incorporate the Kwasanguye land into Ophathe Game Reserve, declared as an addition to the nature reserve, only if it meets the requirements as determined in bullet point 4. ▪ Develop an equitable beneficiation model that enables Kwasanguye to derive socio-economic benefits from the land they have contributed towards the expansion of Ophathe Game Reserve.	incorporation into Ophathe Game Reserve. ▪ Determination of the requirements for the inclusion of the Kwasanguye land into Ophathe Game Reserve. ▪ Incorporation of the Kwasanguye land into Ophathe Game Reserve, declared as an addition to the nature reserve. ▪ An equitable beneficiation model is developed that enables Kwasanguye to derive socio-economic benefits from the land they have contributed towards the expansion of Ophathe Game Reserve.				
LOCAL AND REGIONAL PLANNING						
Determination of the buffer zone / zone of influence requirements around the Ophathe Game Reserve	▪ Determine the ecological impacts and edge effects influencing the ecology of the Ophathe Game Reserve on its boundary ▪ Determine the areas that should be demarcated as buffer zones for the purposes of protecting the biodiversity within the Ophathe Game Reserve	▪ Knowledge of threatening processes on the Ophathe Game Reserve's boundary ▪ Spatial representation (map) of the protected area buffer ▪ Agreements with neighbouring landowners	▪ Analysis of threat/ threatening processes in buffer area ▪ Map of protected area buffer ▪ MOA's, MOU's with landowners ▪ Biodiversity agreements with landowners	▪ No protected area buffer has been established ▪ Incompatible land uses that negatively affect the protected area values in areas surrounding the PA. ▪ Edge effects such as invasive plant encroachment along	Year 2	Conservation Manager with Ecological Advice Unit and Community Conservation Officer

	▪ Negotiate protected area buffer and enter into agreements with neighbouring landowners			the Ophathe Game Reserve's boundary		
	Pro-actively encourage neighbours to introduce 'soft' / conservation-friendly land-uses to facilitate buffering of the protected area.	Conservation friendly/ 'soft' land-uses in areas surrounding the Ophathe Game Reserve's boundary	Minutes of meetings to address Land-use issues, and/ or environmental awareness programme to facilitate an understanding of the need for buffering the protected area	Unsustainable and/ or detrimental Land-use in the area surrounding the protected area.	Ongoing	Conservation manager with District Conservation Officer and Community Conservation Officer
Ensure that water-use planning and Land-use planning take cognisance of the Ophathe Game Reserve objectives.	▪ Make inputs into the development of local and district municipality IDP's and SDF's in an effort to avoid environmentally harmful land uses in Ophathe Game Reserve's buffer zones ▪ Incorporate requirements for the Ophathe Game Reserve's protection into Land use planning schemes (LUMS) ▪ Input into water-use planning in relevant catchments to ensure that the protected area ecological requirement and infrastructure requirements (potable water) are addressed in the planning process	▪ Adoption of environmentally appropriate land uses in IDPs and SDFs in the areas immediately surrounding the protected area ▪ Retention of existing benign land uses in the areas immediately surrounding the protected area ▪ Maintenance of ecological functioning of the protected area in terms of water use ▪ Provision of sufficient good quality water to staff and tourists	▪ IDP of Local and District municipality that acknowledges the importance of and requirements for the protection of the Ophathe Game Reserve ▪ Appropriate zoning in SDF and LUMS ▪ Minutes from Land and Water – use meetings ▪ Proof of membership of catchment management forum ▪ Water monitoring quality/quantity report ▪ Water quality scores	▪ Identification / approval of environmentally harmful land uses on the boundaries of the Ophathe Game Reserve. ▪ Adjacent Land-use and water-use planning do not consider the protected area's objectives	Annually	Conservation Manager with District Conservation Officer and Planning Unit

	▪ Active membership of the relevant catchment management forum					

5.5 ENVIRONMENTAL EDUCATION AND AWARENESS

Environmental interpretation and education of Ophathe Game Reserve's natural and cultural resources will be aimed at creating awareness, understanding and appreciation of its unique cultural heritage, 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.
- Where possible, partnerships with NGO's should be established to ensure effective environmental education and awareness.
- Opportunities to create awareness based on international initiatives such as Arbor Day should be encouraged.

The detailed operational requirements for Environmental education and awareness are set out in Table 9 below.

Table 9: Framework for Environmental Education and Awareness

Strategic Outcome	Management Activities	Management Targets	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
ENVIRONMENTAL EDUCATION AND AWARENESS						
Implement an effective Environmental education and awareness programme linked to the objectives of Ophathe Game Reserve and focussed on the surrounding communities and neighbours	▪ Develop and implement an environmental education and awareness programme for the Ophathe Game Reserve (This should focus on the values and objectives of the protected area) ▪ Compile information and material relating to Ophathe Game Reserve and its values for presentation to school groups/ communities & stakeholders ▪ Collaborate with partners to arrange environmental education and awareness events during national and international environmental days ▪ Implement a monitoring programme to assess the effectiveness of the Environmental Education and Awareness programme ▪ Facilitate 2 x educational tours from school groups from the surrounding community to Ophathe Game Reserve ▪ Visit schools in surrounding communities 2 x per year.	▪ Increased capacity and understanding of the importance of the protection of Ophathe Game Reserve by stakeholders and surrounding communities ▪ Educational tours x 2 to PA ▪ School visits in the surrounding community (2)	▪ Education and awareness programme programmes and attendance lists ▪ Effectiveness of assessment / monitoring documentation ▪ Lack of planning for education and awareness ▪ Ad hoc education and awareness activities taking place on request ▪ Lack of strategy linking the Environmental Education and Awareness to the protected area objectives ▪ Lack of assessment of the effectiveness of the Environmental Education and awareness programme	Lack of understanding and awareness of the values of the protected area and biodiversity conservation in communities around the protected area	Year 2	Community Conservation Officer

5.6 ECO-TOURISM MANAGEMENT & DEVELOPMENT

5.6.1 eco-tourism product development and management

Ezemvelo KZN Wildlife has the mandate to sustainably develop Ophathe Game Reserve to fully realise its eco-cultural based tourism and associated income-generating potential, within the context of protecting its biodiversity and cultural values.

In further developing and managing eco-tourism within the protected area, the following guiding principles should be adhered to:

- Eco-tourism products developed within the protected area must be appropriate to the values and purpose for which the protected area has been proclaimed and must not threaten its biodiversity or ecological function.
- In developing eco-tourism products, requirements for environmental authorisation must be considered and adhered to.
- Eco-tourism products should be designed to capitalise on the unique beauty and biodiversity features of the protected area.
- Eco-tourism products should be developed in response to eco-tourism market demands and opportunities within the protected area and should be carefully assessed to determine their viability.
- The development of eco-tourism products within the protected area must be integrated with eco-tourism strategies and plans in the region.
- Eco-tourism should be used as a tool for the generation of economic activity and employment in the communities surrounding the protected area.
- Eco-tourism infrastructure should be maintained to an acceptable standard based on the Ezemvelo standard and infrastructure must be incorporated in the Scheduled maintenance programme of the protected area.

The detailed operational requirements for eco-tourism are set out in Table 10 below.

Table 10: Framework for Eco-tourism Management & Development

Strategic Outcome	Management Activities	Management Targets	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
ECO-TOURISM MANAGEMENT & DEVELOPMENT						
Ensure that all current eco-tourism infrastructure are maintained	▪ Maintenance of current eco-tourism infrastructure	▪ Infrastructure that are well maintained	▪ Infrastructure maintenance plan	▪ Dilapidated infrastructure	ongoing	Conservation manager
Determination of an eco-tourism market profile, through eco-tourism market research for the Ophathe Game Reserve	▪ Capture visitor information and statistics in order to better understand the Ophathe Game Reserve tourist numbers and market ▪ Investigate the development of Low use activities within the park, e.g. 4 x 4 trails, mountain biking, rustic accommodation	▪ An eco-tourism market profile for the Ophathe Game Reserve ▪ Feasibility study on the development of low use activities	▪ Visitor statistics ▪ Eco-tourism/visitor market profile	▪ No feasible eco-tourism activity	Year 3	Conservation Manager and eco-tourism and Marketing Unit
Implementation of outcomes determined through the feasibility study	▪ Implement the outcomes of the feasibility study	▪ Eco-tourism ventures based on the feasibility study	▪ Eco-tourism infrastructure developed due to the feasibility study	▪ No feasible eco-tourism activity	Year 5	Conservation manager, Senior conservation manager and eco-tourism and Marketing Unit

5.7 BIODIVERSITY RESOURCE & CONSERVATION MANAGEMENT

5.7.1 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 protected area, 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 protected area 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 protected area 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 firefighting:

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

The following guidelines will assist in making a decision regarding when and where to apply fire.

1) The fire should not be able to escape from the area it is intended to burn, particularly onto an adjacent property.

2) Accumulated herbage should be sufficient to achieve either objective 1 or 2 above.

3) This herbage should not have flushed i.e. green material should comprise less than 10% of herbaceous biomass.

4) Patchy burns are acceptable when of sufficient size to prevent overgrazing.

5) Where possible, natural boundaries (e.g. streams, dense vegetation) should be used to control the extent of each fire.

6) Following the decision to burn an area, the following guidelines are appropriate:

   a) For a fire which is aimed at removing residual grass only,

   - A cool head burn should be applied,
   - Moderate to high wind speeds are acceptable where fuel moisture and humidity is sufficient to prevent “crowning” of trees.
   - Back burns should be avoided as far as is possible especially where fuel and/or soil moisture is moderate or low (to reduce dwell time and combustion of litter).

   b) To retard woody plant growth and encroachment into grassland fire intensity should be very high. To achieve this, fires should be :

   - Burnt when ambient temperatures are high (> 25^{o}C), low humidity (< 30%) and fuel loads should be dry.

- Both head and back burns are acceptable. Management of the "fire danger" component of fire behaviour (mainly wind speed & direction) will be the key determinant of which fire type to apply.

A burning plan in the form of a map is presented (Map 8). The boundaries of 7 burning blocks have been identified as set out in paragraph 5 above. A "mosaic" of burning blocks corresponding to NO LESS than 30% of the Parks area should be selected, mapped as set out in sub-paragraph b and burnt annually.

At the beginning of March each year, the District Conservation Manager, Reserve Manager and Park ecologist should inspect the reserve and identify the blocks and internal breaks requiring burning. Burning blocks should be classified as "early" April & May; "Winter" June & July and 'Late" August to the spring flush. The identified burns should be captured onto an Annual Burning Plan map which should then be presented and approved at a monthly management meeting no later than March. The approved map should be sent to Spec. Tech.SZ and the Mthonjaneni Fire Control Area Chairman.

In February and March, all fire equipment (including, fire pumps, bakkie-sakkies and fire beaters should be inspected, repaired and serviced in preparation for the commencement of the burning season.

Boundary firebreaks should be prepared annually starting in April with the spraying of gramoxone and skoffeling / Mowing of tracer lines. Fence lines should be kept clear of vegetation by the application of an herbicide (e.g. Roundup) toward the end of summer. Care should be taken not to cause soil erosion. Boundary firebreaks should be 100m in width where possible, but may not be less than 30m wide at the narrowest point.

Early burns may replace sections of firebreak (internal or external) provided they are burnt before the break is scheduled to be burnt.

For ease of access, management and financial reasons they have been aligned with management roads so as to allow for mechanical support (water tankers etc) during preparation and wild fire containment.

The internal fire break should be at least thirty meters (30m) wide at all points.

The alignment may be on either side of the road dependant on prevailing wind conditions on the day of preparation. However, the break should not be burnt on the same side more than twice consecutively.

The Reserve Manager should annually in March or April, hold a meeting with neighbours especially forestry companies at which an overall burning plan for the fire control area is prepared. The Fire Warden for the Mtonjaneni Fire control Area must attend the meeting.

The prescriptions with regard to the burning of firebreaks are contained in the Control of Veld Fires Act and should be read with care, especially the sections dealing with the requirements regarding the notification of intention to burn and fire agreements.

The detailed operational requirements for fire management are set out in Table 11 below.

Table 11: Framework for Biodiversity Resource & Conservation Management - Fire Management

Strategic outcome	Management activities	Management targets	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
FIRE MANAGEMENT						
Maintenance of the Ophathe Game Reserve Fire Management Plan	▪ Update the fire management plan to address the following fire management objectives, scientific understanding, legal compliance, equipment, personnel training requirements, monitoring and research required ▪ Annual pre-burn assessment ▪ Ecological fires burnt as per the fire management plan ▪ Post-burn monitoring and recordkeeping	Adoption and implementation of the fire management plan	▪ Fire management plan with maps ▪ Annual pre-burn assessment sheets ▪ Fire returns ▪ Fire maps	Burning regimes that result in ecological degradation of the protected area	Year 3	Conservation Manager and Ecological Advice Unit
Adequate fire safety within the Ophathe Game Reserve is ensured	▪ Maintain a system of firebreaks within the protected area that are of adequate extent, which are prepared at the correct time of the year under the appropriate weather conditions. ▪ Ensure that staff are trained and that adequate firefighting equipment is available within the protected area. ▪ Maintain membership of the local Fire Protection Association, or if one does not exist, champion the creation of one.	Compliance with the National Veld and Forest Fires Act	▪ Fire returns ▪ Letters to neighbours to inform them of burning ▪ Training registers ▪ Fire Protection Association membership and meeting minutes	▪ Inadequate personnel, equipment or an inability to communicate effectively in fighting fires. ▪ Wildfires spreading from the protected area to neighbouring properties ▪ Legal actions against Ezemvelo due	Ongoing	Conservation Manager

Strategic outcome	Management activities	Management targets	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
				to non-compliance with the National Veld and Forest Fire Act ▪ Lack of funding ▪ Incapacity of staff ▪ Arson/ run away fires		

5.7.2 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. Appendix D contains the Alien and Invasive species monitoring and control plan for Ophathe Game Reserve.

5.7.3 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 protected area 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 12 below.

Table 12: Framework for Biodiversity Resource & Conservation Management - Invasive Plant control & Soil Erosion Control

Strategic Outcome	Management Activities	Management Targets	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
INVASIVE PLANT CONTROL						
Development of an invasive species control plan for the protected area.	▪ Develop a Standard Operating Procedure for Alien and invasive plant control for Ophathe Game Reserve ▪ Develop a detailed inventory of the listed invasive species. ▪ Map the areas and extent of invasive species infestations. ▪ Describe previous efforts to control and eradicate invasive plants. ▪ Cost the alien and invasive control plan to assist with budget submissions and sourcing sufficient funding ▪ Outline the measures required to monitor, control and eradicate the listed invasive species. ▪ Identify measurable indicators of progress and success in implementing the invasive species control plan (Should this information already been contained in the relevant appendix this section can be changed to implementation) *Dependant on funding	Compliance with the Biodiversity Act 10 of 2004 Section 76	▪ Inventory of invasive species ▪ Maps indicating invasive species and infestation densities ▪ Records of previous control efforts ▪ Monitoring records of control efforts ▪ Photographs of control efforts and fixed point photographs to assess change in infestation over time	▪ Further spread of existing levels of infestation of listed invasive species ▪ Persistence of existing infestations ▪ New infestations of listed invasive species ▪ Loss of funding	Year 1 and then annually	Conservation Manager, Ecological Advice Unit and Alien Plant Control Unit
Clear all invasive plant infestations in the protected area.	▪ Implement concerted, sustained control efforts in identified areas of invasive plant infestation based on the invasive control plan	▪ Clear all alien infestations of listed invasive plants in five years	▪ MoU/MoA with strategic partners ▪ Monitoring records and		Year 5	Ezemvelo KZN Wildlife Alien Plant Control Unit and

Strategic Outcome	Management Activities	Management Targets	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
INVASIVE PLANT CONTROL						
	▪ Undertake suitable rehabilitation measures, including re-vegetation using indigenous plant species, to prevent soil erosion, following clearing of invasive plant species ▪ Develop partnerships with Working for Water and other strategic programmes		reports of alien and invasive plant control efforts ▪ Maps and photos indicating changes in infestations due to control efforts			Conservation Manager
SOIL EROSION CONTROL						
Implementation of procedures to identify, rehabilitate and manage areas that have been significantly impacted by soil erosion	▪ Undertake a detailed survey of the protected area to identify the extent and severity of soil erosion ▪ Identify the requirements for soil erosion control and rehabilitation within the protected area ▪ Implement soil erosion control and rehabilitation measures, focussing strategically on key areas such as those impacting on watercourses or that are growing larger (As identified in the survey) ▪ Undertake preventative measures in areas with low plant cover that may be at risk of soil erosion (alongside roads)	Effective soil erosion control measures	▪ Records of control efforts implemented ▪ A detailed map depicting areas of soil erosion within the protected area ▪ Monitoring records including maps and fixed point photographs to measure success of efforts	▪ Further erosion of impacted areas ▪ Sedimentation impacts in watercourses and wetland areas	Year 5	Conservation Manager and Eco advice

5.7.4 Alien animal control

Alien animal species can threaten the ecological, genetic or natural aesthetic integrity of Ophathe Game Reserve and can be vectors for the spread of diseases. In dealing with the control of alien animals, procedures to deal with animals that stray into the protected area 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 protected area 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).

Appendix D contains the Alien and Invasive species monitoring and control plan for Ophathe Game Reserve.

5.7.5 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 protected area will be considered, based on the following guiding principles:

- The context of the protected area'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 protected area.
- 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 protected area'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 13 below.

Table 13: Framework for Biodiversity Resource & Conservation Management - Alien Animal Control & Resource utilisation

Strategic Outcomes	Management Activities	Management target	Target indicator (Evidence)	Indicators of Concern	Priority	Responsibility
ALIEN ANIMAL CONTROL						
Implementation of procedures to manage alien animals found within the protected area.	▪ Together with neighbouring communities, agree on the approach to dealing with stray livestock and domestic animals found in the protected area ▪ Communicate the reserve policy on finding dogs in the protected area ▪ Develop a policy to address the control of feral animals and alien fish found within the protected area	▪ Creation of cooperative structures between Ezemvelo KZN Wildlife, local communities and law enforcement officials ▪ Control of any alien animals found within the protected area	▪ Policy to address control of feral animals and the use of domestic animals in the protected area ▪ Incident records	Uncontrolled access of domestic animals or livestock within the protected area.	Year2	Conservation Manager
RESOURCE UTILISATION						
If extractive resource use is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy.	▪ Develop an approach to sustainable extractive resource use in the protected area ▪ Ensure that any approved extractive resource use is aligned to the protected area zonation plan ▪ Communicate the approach for sustainable resource use to the neighbouring communities ▪ Record and valuate all extractive resource use	Ecologically sustainable extractive resource use that benefits local communities	▪ Resource returns ▪ Cost reports of natural resource use ▪ Minutes of meetings with communities	Uncontrolled or unsustainable resource extraction	If required	Conservation Manager
If bioprospecting is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy	Collection of biological materials or samples if the appropriate permits or permission has been given in accordance with Ezemvelo KZN Wildlife policy	Sustainable, legal collection of biological material or samples	▪ Permits for bioprospecting ▪ Monitoring records/ returns	Illegal collection of biological material or samples.	If required	Conservation Manager and Resource Use Ecologist

5.7.6 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 protected area and meeting set provincial conservation targets for species and vegetation types.
- The introduction of indigenous species into the protected area 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 protected area.

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.

Genetic diversity is one of three levels of biological diversity requiring conservation (Frankham, 1996) (and small population size reduces the evolutionary potential of wildlife species. In an effort to maintain genetic diversity and also to avoid genetic pollution of game populations, especially in small protected areas (PAs), it is essential to regularly bring in new individuals into the populations in order to augment the populations genetically as well as to avoid introducing and/or keeping closely related subspecies in one protected area. The keeping of closely related subspecies in one protected area has, undesirably, resulted in hybridization between subspecies (e.g. blue wildebeest & black wildebeest, etc.) which could lead to the loss of both subspecies through the production of hybrids. Hybrids are undesirable in conservation since they are not genetically pure species. To a certain extent the differing abilities of individuals of a species to respond successfully to environmental variation are genetically based (Mace, 1986), therefore, maintaining the genetic diversity of species populations is even more important nowadays due to the rapidly occurring climate change processes which will put pressure on species to adapt rapidly to their changing environment. In the absence of genetic diversity, species populations have little or no chance of survival by means of adaptation to the rapidly changing environment. Due to the recent spike in the intensive breeding for colour morphs (variants) by the private game ranching industry it has become necessary for conservationists to guard against the possible introduction of the genetically compromised colour morphs into the protected area in order to protect the genetically pure populations from contamination by compromised genes.

According to Ezemvelo KZN Wildlife Norms & Standards for the management of large herbivores, Protected Areas should develop where necessary economic carrying capacity and management strategies for the management of these populations. The following strategies are used in the management of wildlife in Ezemvelo Protected Areas.

Furthermore key wildlife species such as predators also require specific management interventions and these strategies needs to be recorded and monitored in order to facilitate adaptive management.

Conservation targets and management strategies will be included in the Operations Pan for Ophathe Game Reserve to be used with the APO for implementation of the plan.

The detailed operational requirements for the management strategies for large herbivores and key species is set out in Table 14 below.

The following management strategies are used to manage all large herbivore species in Ezemvelo Protected Areas and has been extracted from the Ezemvelo KZN Wildlife Norms and Standards for the Management of Large herbivores:

No Management:

Apply to species in a system that can be allowed to achieve ecological carrying capacity without knowingly endangering other important biodiversity components in the protected area. This management option assumes that the important ecological processes responsible for establishing the equilibrium between the species and its resources are largely intact.

Ecological Process Management:

Applies to species in a system where clearly one or more ecological processes are dysfunctional and need to be simulated or re-established in order to create an equilibrium between the species and its resources. Management interventions include one or a combination of the following

- Reconfiguring landscape drivers: of population dynamics e.g. artificial water supply, range expansion, corridor development etc.
- Simulating ecological process e.g. dispersal (via dispersal sinks), predation (via predator simulation removals).
- Re-establishing ecological process e.g. re-establishing indigenous predators
- Curtailment of population eruption e.g. managing the growth rate and age and sex structure of a population to stay within the ecological or economic carrying capacity – removals, limited duration contraception etc.

Biodiversity Management:

Management associated with a recognised direct threat to other biodiversity that the species to be managed poses e.g. impacts on resources or competition with threatened or declining species. This management option often entails a fixed upper limit for species and is usually applicable to smaller protected areas that are fenced or species such as elephants that are ecosystem engineers that could potentially have a large impact on the environment and could cause irreversible changes to the state of vegetation.

Conservation Management:

Management associated with live removal of a proportion of the population explicitly for establishing additional populations within the species natural range e.g. black rhino removal and range expansion programme. Populations may be maintained at ecological carrying capacity to optimise production.

Sustainable Harvest Management:

Population management associated with a predetermined and authorised commitment to harvest one or more animal populations for economic purposes e.g. hunting or live sale. Sustainable harvesting are restricted to areas zoned for hunting or resource use areas in the PA zonation plan.

Scientific Research:

The removal of animals to collect material required to achieve a research objective must be identified and approved through a registered research proposal. Capture or culling of animals for research purposes can only be permitted where material cannot be derived from removal operations authorised for other reasons.

Table 14: Management Strategies for Large Herbivores

Species	Target / Carrying Capacity	Rationale	Management Strategy	Status	Key Threats
White Rhino	Carrying capacity to be estimated, but population should be large enough to be viable and contribute to Metapopulation.	Endangered, facing severe poaching pressure	Conservation management	At present less than 10 white rhino at EOHP	▪ Poaching ▪ Habitat loss
Black Rhino	Carrying capacity to be estimated, but population should be large enough to be viable and contribute to Metapopulation.	Critically endangered, facing severe poaching pressure	Conservation management	None – future introductions to be considered.	▪ Poaching ▪ Habitat loss
Leopard	N/A	Endangered species. Facing severe prosecution outside of protected areas	Conservation management	Unknown. Survey by Panthera in 2015 unsuccessful due to theft of cameras	▪ Illegal hunting / prosecution ▪ Habitat loss & fragmentation ▪ Decline in prey species

5.7.7 Conservation Targets

The 2011 version of the KwaZulu-Natal systematic biodiversity plan identifies the provincial conservation targets. The conservation of Ophathe Game Reserve contributes towards the achievement of a portion of some of these targets. Targets will continue to be updated as knowledge develops about the ecology of areas, connectivity between them, and other process requirements for ecosystems, communities and species. On this basis, the conservation targets should be viewed as a set of working hypotheses around which conservation planning and evaluation can take place. An advantage of developing strategies around targets is that this process highlights critical knowledge deficits thus guiding future research.

Table 15: Systematic Conservation targets to which Ophathe Game Reserve contributes

Feature	Description	Percentage of target located within Ophathe Game Reserve	Status
Tritogenia ngomensis	Annelid	33.33	
Damalis femoralis	Diplopoda	3.13	
Eremidium erectus	Grasshopper	0.27	
Pagopedilum martini	Grasshopper	0.55	
Whitea alticeps	Grasshopper	0.21	
Whitea coniceps	Grasshopper	0.34	
Diceros bicornis minor	Mammal	1.18	Vulnerable
Doratogonus natalensis	Millipede	0.88	
Doratogonus peregrinus	Millipede	25.04	
Spinotarsus glomeratus	Millipede	0.16	
Ulodesmus natalensis natalensis	Millipede	100.00	
Zinophora laminata	Millipede	4.68	
Edouardia conulus	Mollusc	0.24	
Euonyma lymneaeformis	Mollusc	0.21	
Helichrysum woodii	Plant	10407.00	Near Threatened
Dry Ngongoni Veld	Vegetation Type	2.81	Endangered
Midlands Mistbelt Grassland	Vegetation Type	0.11	Critically Endangered
Subtropical Alluvial Vegetation	Vegetation Type	0.41	Endangered
Subtropical Freshwater Wetlands	Vegetation Type	0.00	Least threatened
Zululand Lowveld	Vegetation Type	5.16	Least Threatened
Tritogenia ngomensis	Annelid	33.33	

The detailed operational requirements for wildlife management and the achievement of conservation targets are set out in Table 16 below.

Table 16: Framework for Biodiversity Resource & Conservation management - Wildlife management and Conservation Targets

Strategic Outcomes	Management Activities	Management Targets	Target Indicators (Evidence)	Indicators of Concern	Priority	Responsibility
WILDLIFE MANAGEMENT						
Develop and implement a strategy for the introduction and management of wildlife into the protected area in accordance with Ezemvelo KZN Wildlife policies.	▪ Ensure that any proposals for the introduction of wildlife species conform to Ezemvelo KZN Wildlife policies ▪ Ensure that only species known to have historically occurred in the protected area are re-introduced ▪ Ensure that species introductions are adequately documented	▪ An agreed upon approach to future wildlife species introductions ▪	▪ Introduction proposals and relevant internal committee approvals ▪ Introduction permits and monitoring reports	Ad hoc introductions of species, particularly those that may not have historically occurred in the protected area	Year 5	Ezemvelo KZN Wildlife Ecological Advice Unit and Conservation Manager
	Ensure adequate population control measures for the management of wildlife in the protected area	▪ Wildlife Population managed based on the determined ecological carrying capacity	▪ Monitoring reports ▪ Population trend graphs and reports	Ecological degradation as a result of over-stocking of wildlife species Complaints from tourist due to understocking of wildlife species	Ongoing	
Development and implementation of a strategy for human/wildlife conflict	▪ Undertake preventative measures, such as boundary fence maintenance, to minimise the need for human/wildlife conflict ▪ Apply appropriately humane methods, if animals must be destroyed or captured	▪ Effective procedures and relationships with neighbours in dealing with	▪ Records of preventative actions ▪ Incident reports ▪ Permits	Frequent complaints from neighbours with no clear response	Year 1	Conservation Manager and DCO

Strategic Outcomes	Management Activities	Management Targets	Target Indicators (Evidence)	Indicators of Concern	Priority	Responsibility
		human/wildlife conflict				
CONSERVATION TARGETS						
Ensure that there is sufficient information and understanding of biodiversity in Ophathe Game Reserve to inform and support the achievement of specific biodiversity objectives	▪ Identify priority / key species, habitats and ecosystems ▪ Identify gaps in available knowledge with regard to these species ▪ Develop internal and external partnerships to address these gaps ▪ Ensure that the abovementioned data is in an understandable format and readily accessible for decision making purposes to the Conservation Manager.	▪ Priority species, habitats and ecosystems has been identified and information is available on site to support planning and decision making	▪ Priority species, habitat and ecosystem conservation targets ▪ List of required information/ research needs ▪ Information management system containing supporting information	▪ Priority species, habitats and ecosystems have not been identified Information is not sufficient to support planning and decision making	Year 2 and then annually	Conservation Manager and Eco Advice Unit
Processes are established to determine success of management interventions in protecting the ecosystems, communities and species of the protected area	Develop surveillance and monitoring plans for key management interventions in accordance with the Ezemvelo KZN Wildlife policies and norms and standards	▪ Achievement of protected area conservation targets	▪ Surveillance and monitoring plans for key ▪ Monitoring plans for key rare and endangered species ▪	Lack of awareness of the status of key threatening processes including infestations of invasive plant species and severity and	Year 3	Ezemvelo KZN Wildlife Ecological Advice Unit

Strategic Outcomes	Management Activities	Management Targets	Target Indicators (Evidence)	Indicators of Concern	Priority	Responsibility
				extent of soil erosion		

5.7.8 Cultural Heritage Management

According to the National Heritage Resources Act No. 25 of 1999 the 'conservation, in relation to heritage resources, includes protection, maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance'.

The Ophathe Game Reserve has both natural and cultural values that need to be protected. In addressing Cultural heritage management, the following guiding principles should be adhered to:

- Access to cultural heritage sites must be of a nature that considers the safety of the visitors.
- The cultural heritage sites including grave sites needs to be properly demarcated in order to prevent accidental damage by fire or other means.
- Sites (if required and based on the AMAFA recommendation) must be cleared of excess vegetation to reduce fire risk.

In managing the cultural assets of Ophathe Game Reserve, in accordance with the National Heritage Resources Act the following guiding principles will apply:

- All Cultural resources must be carefully managed to ensure their survival.
- Heritage resources contribute significantly to research, education and eco-tourism and must be managed and used in a way that ensures respect for cultural values.
- Promote the use and enjoyment of and access to heritage resources, in a way consistent with their cultural significance and conservation needs.
- Heritage resources must be researched, documented and recorded.

The detailed operational requirements for wildlife management and the achievement of conservation targets are set out in Table 17 below.

Table 17: Framework for Biodiversity Resource & Conservation Management - Cultural Heritage Management

Strategic outcome	Management activities	Management targets	Target indicator (Evidence)	Indicators of Concern	Priority	Responsibility
CULTURAL HERITAGE MANAGEMENT						
Ensure the protection and the improved awareness of the cultural heritage resources and values of Ophathe Game Reserve	Implement the Cultural Heritage Management Plan for all cultural heritage sites of significance in Ophathe Game Reserve (See Appendix D - Cultural Heritage Management Plan).	Effective management of all cultural heritage sites in Ophathe Game Reserve	Management guidelines for each heritage site	Vandalism or damage to heritage sites due to inappropriate eco-tourism or management activities	Ongoing	Conservation Manager with Amafa
	Assess the effectiveness of cultural heritage management through a cultural heritage condition assessment	Management effectiveness assessment for cultural heritage management	Cultural heritage management condition assessment report	Cultural heritage sites not effectively managed	Ongoing	External specialist

5.8 OPERATIONAL MANAGEMENT

5.8.1 Financial and human resources

Ophathe Game Reserve cannot be effectively managed without adequate sustained funding and sufficient human resources. In addressing the financial and human resource needs of the protected area, the following guiding principles should be adhered to:

- Adequate funding must be provided for the management of the Ophathe Game Reserve to ensure the protection of its biodiversity and cultural values and the continued provision of its ecosystem services.
- Commercial operations within the Ophathe Game Reserve must be self-sufficient and, if profitable, should be used to subsidise its conservation and community programmes.
- Adequate, properly trained and experienced staff must be employed at the Ophathe Game Reserve to undertake the operations required for its effective management.

5.8.2 Facilities and infrastructure

In order for Ophathe Game Reserve to operate appropriately, adequate facilities and infrastructure need to be developed and maintained both for management and eco-cultural eco-tourism purposes. In addressing facilities and infrastructure needs in the protected area, 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 protected area.
- Facilities and infrastructure must be provided to ensure the effective management and operation of the protected area.
- Practical solutions to the provision of electricity should be sought at the protected area based on available renewable energy technologies.
- Facilities and infrastructure must be provided to support the eco-cultural eco-tourism activities in the protected area.

The detailed operational requirements for financial and human resource, and facilities and infrastructure development and management are set out in Table 18 below.

Table 18: Framework for Operational Management - Financial, Human Resources and Infrastructure

Strategic outcome	Management activities	Management target	Target indicator (Evidence)	Indicators of Concern	Priority	Responsibility
FINANCIAL RESOURCES						
Development and implementation of a five-year financial plan that identifies the resource needs to achieve the objectives for the protected area	▪ Undertake an assessment of past income and expenditure trends in the Ophathe Game Reserve ▪ Develop a five-year projection of income and expenditure targets that will allow for the effective achievement of the protected area's objectives	An understanding of the PA's financial requirements	▪ Budget proposals and budget allocations ▪ Income generation statistics ▪ Commitment register	Inadequate funding to effectively protect and operate the protected area	Year 1	Ezemvelo KZN Wildlife Regional Management Unit and Conservation Manager
	▪ Develop and submit annual budget requests based on the Annual plan of operation and the financial plan ▪ Manage the budget in line with the park management plan and the Public Finance Management Act No 1 of 1999	Secure and sufficient budget to address critical protected area needs	▪ Budget request ▪ Annual plan of operation ▪ Commitment ledger	▪ No operational budget ▪ Inadequate operational budget	Annual	Ezemvelo KZN Wildlife Regional Management Unit and Conservation Manager
HUMAN RESOURCES						
Ensure that the protected area is resourced with a sufficient staff establishment for its effective management and operation	▪ Undertake a review of current staffing levels to determine the human resource needs to effectively manage the Ophathe Game Reserve ▪ Undertake regular training and skills development to ensure that staff are able to effectively complete their duties	▪ Staff establishment that is adequate for the achievement of critical management needs ▪ Protected area staff adequately skilled for the	▪ Organogram ▪ Training requests, records and registers	▪ Staff establishment is inadequate for the achievement of critical management needs ▪ Protected area staff lack skills for protected	Year 2	Ezemvelo KZN Wildlife Regional Management Unit and Conservation Manager

		execution of their duties		area management ▪ No skills development programme		
Ensure that there is an effective staff management programme in place	▪ Effective supervision of staff and continual assessment of standard of work ▪ Implementation of a performance management system	Fully implemented staff management system ensuring that staff execute duties to a high standard	Staff work plans, attendance records and performance assessments	No staff management programme is in place and unacceptable standard of work	Ongoing	Conservation Manager
Ensure that the protected area is compliant with the Occupational Health and Safety Act No 85 of 1993	▪ Appoint Health and safety representatives ▪ Provide training in work considered Listed work under the act as well as first aid training ▪ Identify hazards and evaluate risks for listed work ▪ Provide safety equipment where required ▪ Keep record of any incidents including Injury on Duty ▪ Collaborate with OH&S representatives to minimise risks to employees ▪ Implement a formal programme for hazardous substances with the relevant infrastructure to keep these securely ▪ Provide such facilities, assistance and training as a health and safety representative may reasonably require and as have been agreed upon for the carrying out of his functions	PA management effectively and fully implement the requirements in the Occupational Health and safety Act No 85 of 1993	▪ Occupational Health and Safety Files ▪ Training records of first aiders ▪ Inspection sheets for OH&S representatives ▪ Incident reports ▪ IOD documentation ▪ Hazardous substance programme documentation	Noncompliance with the Occupational Health and safety Act No 85 of 1993	Ongoing	Conservation Manager

	▪ Ensure that any chemical or listed substances that are required to be stored or handled by protected area staff are stored and handled in a safe way					
FACILITIES AND INFRASTRUCTURE						
Ensure that facilities and infrastructure in the protected area are adequately maintained	▪ Ensure that the boundary fence is regularly inspected and adequately maintained to ensure security and to contain game species within the protected area ▪ Develop and implement a schedule maintenance programme to maintain facilities and infrastructure in a condition that meets relevant environmental, health and safety requirements	Regular scheduled maintenance of all facilities and infrastructure *Dependant on funding	▪ Fence inspection reports and maps ▪ Infrastructure schedule and inspection reports	▪ Environmental, health or safety incidents associated with inadequately maintained facilities and infrastructure ▪ Regular escape of key species due to inadequate fencing	Ongoing	Conservation Manager
	▪ Develop and implement a programme for environmentally responsible service and other infrastructure in Ophathe Game Reserve	Programme with phased implementation for environmentally responsible infrastructure / technology		▪ Not being environmentally friendly	Upon implementation of programme	Conservation manager, eco-advice

	▪ Ensure signage of the reserve is clearly visible					

6 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.

6.1 ANNUAL MONITORING

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

- An objective, target or desired state of the attribute or resource.
- 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 Ophathe Game Reserve is set out in Table 19.

Table 19: Annual Surveillance and Monitoring Schedule

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 local board and community trust	Written record	Bi-monthly	Conservation Manager	Annual report
Buffer zone management	Influx of listed invasive vegetation on the protected area'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 protected area in local and regional IDPs and SDFs	Written record	Annually	Ezemvelo KZN Wildlife Senior Conservation Manager	Annual report
Eco-cultural eco-tourism	Visitor statistics	Completion of questionnaire	Ongoing	Conservation Manager	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

Management issue	Parameters to be monitored	Monitoring measures	Monitoring frequency	Responsibility	Reporting requirements
	Herbicide usage	Written record	Annually		Annual report
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	Monitoring plan	To be determined	Conservation Manager supported by Ecological Advice Unit	Annual report
Resource utilisation	Extraction of resources from the protected area	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
	State of the boundary fence	Photographs/written records	Monthly		Annual report
	Weather data	Surveillance plan	To be determined	Ezemvelo KZN Wildlife Ecological Advice Unit	Annual report
	State of facilities and service infrastructure	Maintenance schedule/written records	Monthly	Conservation Manager	Annual report
	Pollution events	Photographs/written records	Per event	Conservation Manager	Per event

As set out in Table 20 the following issues require a surveillance plan:

- The influx of listed invasive vegetation on the Ophathe Game Reserve's boundaries.
- The capture of weather data – it is recommended that the Ezemvelo KZN Wildlife Ecological Advice Unit approach the South African Weather Service to request that they install a proper weather station at the protected area.

In addition, the following issues require a monitoring plan:

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

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.

6.2 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 Ophathe Game Reserve, for its review and comment. Records of recommendations for update/changes to the five-year plan should be kept on record 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.
- 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 relevant Operations Committee before being subjected to the appropriate stakeholder participation process and before recommends that the proposed amended protected area management plan be submitted for authorisation to the Ezemvelo KZN Wildlife EXCO Committee, Board and to the MEC.

7 Ophathe Game Reserve annual plan of operation

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

7.1 IMPLEMENTATION OF THE PROTECTED AREA MANAGEMENT PLAN

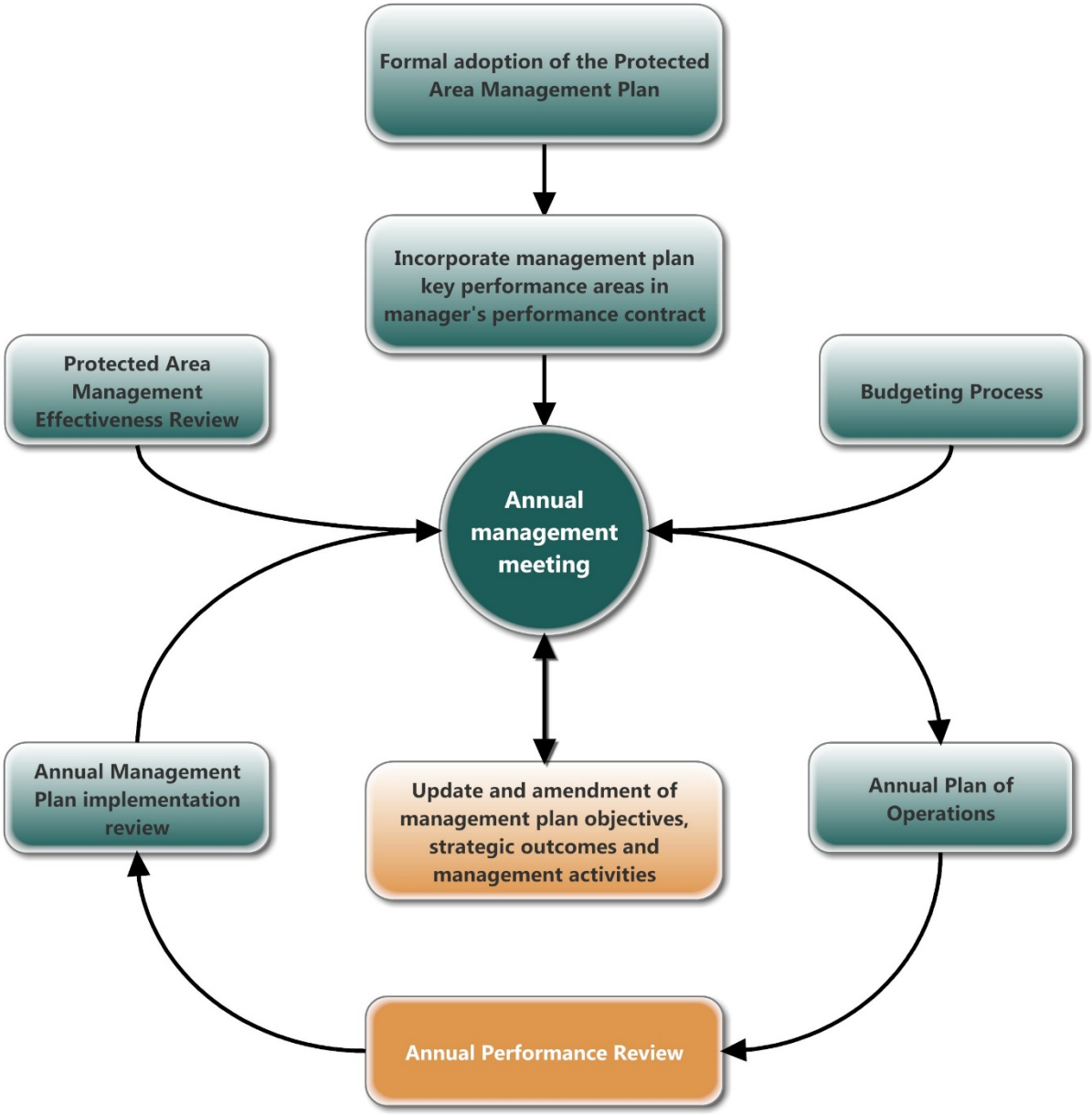


Figure 5: Process for the implementation of Protected Area Management Plans

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 Ophathe Game Reserve will be to:

- Finalise the annual report, as part of the annual protected area management plan implementation review described 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 the year, based on the key performance areas set out in the management plan, in accordance with the Ophathe Game Reserve 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.

7.2 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 relevant Operations Committee in order to assign responsibility for the completion of the management activity.

7.3 OPHATHE GAME RESERVE RESOURCE REQUIREMENTS

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

7.3.1 Staff and equipment

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

- Administration and management of the protected area.
- Patrolling of the protected area and its boundaries.
- An annual burning programme and firefighting 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 protected area.
- Maintenance of facilities and infrastructure within the protected area.
- Capture of visitor information and statistics.
- Admitting visitors to the nature reserve and charging entrance fees.
- Community liaison and cooperation.
- Environmental interpretation and education.

7.3.2 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:

- Development of new Picnic sites
- Road maintenance
- Fence maintenance
- Refurbish the old Park Home at Thonsini
- Maintenance of staff houses and administrative facilities within the nature reserve.
- Provision of additional staff accommodation
- Installation of directional and interpretive signage within the nature reserve.
- Development of facilities and infrastructure to support new eco-tourism products identified in the feasibility study, such as a picnic site.

7.4 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.

7.5 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.

7.6 FINANCIAL REPORTING

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

REFERENCES

Borrini-Feyerabend, G., Farvar, G., Nguinguiri, J. C. & Ndangang, V., 2007. *Co-management of natural resources: Organising, Negotiating and Learning-by-Doing..* Heidelberg: Kasparek Verlag.

Carbutt, C. & Goodman, P. S., 2010. *Assessing the Management Effectiveness of State-oned, Land-based Protected Areas in KwaZulu-Natal,* Pietermaritzburg: Unpublished report.

De Koning, M., 2010. *Analysis of a Model designed for land restitution in protected areas in South Africa..* Pretoria: University of Pretoria.

Department of Environmental Affairs and Eco-tourism, 2008. *The National Protected Area Expansion Strategy.* Pretoria: s.n.

Ervin, J., 2003. *Rapid Assessment and prioritization of protected Area Management (RAPPAM) Methodology.* Gland, Switzerland: WWF Forests for Life programme.

Ezemvelo KZN Wildlife, 2010. *KZN Protected Area Expansion Strategy and Action Plan.* Pietermaritzburg: Unpublished Report.

Frankham, R., 1996. Relationship of geneticvariations to population size in wildlife. *Conservation Biology,* 10(6), pp. 1500 - 1508.

Kepe, T., 2008. Land claims and Co-management of Protected Areas in South Africa: Exploring the Challenges. *Environmental Management,* 41 (3), pp. 311 - 321.

Mace, J., 1986. Genetic management of small populations. *International Zoo Yearbook,* pp. 167 - 174.

Appendix A: Definition of terms

Alien species	Species or genotypes, which are not indigenous to Ophathe Game 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 Ophathe Game 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	As defined in Section 1 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) as "environmental goods and services" meaning: a. Benefits obtained from ecosystems such as food, fuel and fibre and genetic resources. b. Benefits from the regulation of ecosystem processes such as climate regulation, disease and flood control and detoxification. c. Cultural non-material benefits obtained from ecosystems such as benefits of a spiritual, recreational, aesthetic, inspirational, educational, community and symbolic nature;"

	For the purposes of this management plan, sustainable water production is also specifically included under this definition.
Environmental degradation	The deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems and the loss of species or undesirable reduction of species population numbers from a specific area from an environmental health perspective
Ezemvelo KZN Wildlife	Nature Conservation Service as established in terms of the KwaZulu-Natal Nature Conservation Management Act No. 9 of 1997.
Indigenous species	In relation to a specific protected area, means a species that occurs, or has historically occurred, naturally in a free state of nature within that specific protected area, but excludes a species introduced in that protected area as a result of human activity (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).
Invasive species	Means any species whose establishment and spread outside of its natural distribution range – a. Threaten ecosystems, habitats or other species or have a demonstrable potential to threaten ecosystems, habitats or other species. b. May result in economic and environmental harm or harm to human health. (As per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).
Joint management	The agreed co-ordination of management and/or management actions by landowners and/or mandated managers on their individual or combined properties in order to achieve common management objectives.
Local community	Any community of people living or having rights or interests in a distinct geographical area (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).
Management	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).
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 KZN Wildlife and a third party that supports the achievement of the Game Reserve management objectives.
Protected areas	Means any area declared or proclaimed as such in terms of section 3 or listed in the Second Schedule to the KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997); or Means any of the protected areas referred to in section 9 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).
Protected area management committee	Is the management body that deals with the day-to-day management of the protected area and is chaired by the Conservation Manager.
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).

Appendix B: Proclamation of Ophathe Game Reserve

KWAZULU GOVERNMENT NOTICE No. 289 OF 1991
ESTABLISHMENT OF THE OPHATHE GAME RESERVE IN THE DISTRICT OF MTONJANENI

Under and by virtue of the powers vested in me by section 29 (1) of the KwaZulu Nature Conservation Act, 1975 (Act 8 of 1975) as amended, I, Mangosuthu Gatsha Buthelezi, Minister of Economic Affairs, hereby determine the farms defined in the accompanying schedule be known as a game reserve and that the name Ophathe Game Reserve be assigned to the said area.

M.G. BUTHELEZI
MINISTER OF ECONOMIC AFFAIRS

SCHEDULE

DESCRIPTION OF THE OPHATHE GAME RESERVE

The farms situated east of the new Ulundi to Melmoth Road P52.

The farm WITVOLOOS 6553	-	Sub-division 1	971,2464ha.
	-	Sub-division 3	394,6235ha.
The farm WELTEVREDEN 6113	-	Remainder	800,2653ha.
	-	Sub-division 1	727,7468ha.
The farm MARS 12874			895,9748ha.
The farms DOORNHOEK 15736 and DOORNHOEK 6112			2600,1428ha.
The farm STERKFONTEIN 6111			1565,0699ha.
The farm STOCKVILLE 13904			600,4723ha.
Overvloed 7432 portion of remainder			270,0000ha.
Witvoloos 453 portion of sub-division 2			290,0000ha.
Extent of area			8 825,5400ha.

KWAZULU GOEWERMENTSKENNISGEWING Nr. 289 VAN 1991
INSTELLING VAN DIE OPHATHE WILDRESERVAAT IN DIE DISTRIK VAN MTONJANENI

Kragtens die bevoegdheid aan my verleen deur artikel 29 (1) van die KwaZulu Natuurbewaringswet, 1975 (Wet 8 van 1975) soos gewysig, bepaal ek, Mangosuthu Gatsha Buthelezi, Minister van Ekonomiese Sake, hierby die gebied omskryf in bygaande skedule as 'n wildreservaat en dat die naam Ophathe Wildreservaat aan die genoemde gebied toegeken word.

M.G. BUTHELEZI
MINISTER VAN EKONOMIESE SAKE

SKEDULE

BESKRYWING VAN DIE OPHATHE WILDRESERVAAT

Die plase geleë oos van die nuwe Ulundi - Melmoth Pad P.52.

Die plaas WITVOLOOS 6553	-	Onderverdeling 1	971,2464ha.
	-	Onderverdeling 3	394,6235ha.
Die plaas WELTEVREDEN 6113	-	Restant van	800,2653ha.
	-	Onderverdeling 1	727,7468ha.
Die plaas MARS 12874			895,9748ha.

2

THE
Provincial Gazette
OF
KwaZulu-Natal

Published by Authority
(Registered at the post office as a newspaper)

DIE
Provinsiale Koerant
VAN
KwaZulu-Natal

Op Gesag Uitgegee
(As 'n nuusblad by die poskantoor geregistreer)

IGazethi
YESIFUNDAZWE
saKwaZulu-Natali

Ishicilelwe ngegunya
(Irejistiwe njengephephandaba eposihhovisi)

No. 6487 ULWESINE, 1 KUNHLANGULANA 2006

Ukuze uthole *iGazethi yesiFundazwe* kwi-INITHANETHI ngaphandle kokukhokha, iya ku: http://www.lawsoc.co.za/kznprovince/index.htm

No. 6487 THURSDAY, 1 JUNE 2006

To access the *Provincial Gazette* ONLINE and free of charge, go to:
http://www.lawsoc.co.za/kznprovince/index.htm

No. 6487 DONDERDAG, 1 JUNIE 2006

Die *Provinsiale Koerant* is kosteloos AANLYN beskikbaar by:
http://www.lawsoc.co.za/kznprovince/index.htm

APPENDIX B

ISiza	2/1262	0.6699 ha
ISiza	1/1262	0.4933 ha
ISiza	1/1263	0.2514 ha
ISiza	R/5/1255	0.6378 ha
ISiza	1272	1.1362 ha
ISiza	1274	2.6029 ha
ISiza	3094	2.8381 ha
ISiza	10/3/166	0.0923 ha
ISiza	11/4/166	0.1522 ha
ISiza	12/5/166	0.3004 ha
ISiza	13/5/166	0.1782 ha

Totale oppervlakte: 60.4525 ha

G. NDABANDABA
Minister van Landbou en Omgewingsake

No. 870, 2006 1 kuNhlangulana 2006

UMNYANGO WEZOLIMO KANYE NEZEMVELO

ISAZISO NGOKUHAMBISANA NESIGABA 3(2)(A) SOMTHETHO WOKUPHATHWA KOKONGIWA KWEZEMVELO WAKWAZULU-NATALI

MINA, Gabriel Ndabandaba, uNgqongqoshe wezoLimo kanye nezeMvelo, ngaphansi kwegunya namandla enginikezwe yisigaba 3(2)(a) soMthetho wokuPhathwa koKongiwa kweMvelo waKwaZulu-Natali, ka-1997 (uMthetho No. 9 ka-1997), ngalokhu ngimemezela ngokusemthethweni i-Palmiet Nature Reserve echazwe ngezansi njengendawo evikelekile:

Incazelo yendawo

ISiza	417	21.4789ha
ISiza	380	13.981ha
ISiza	R/3011	1.5117ha
ISiza	R1240	3.2341ha
ISiza	10/3/2661	0.2413ha
ISiza	11/4/2661	0.3369ha
ISiza	12/5/2661	0.3595ha
ISiza	13/6/2661	1.1136ha
ISiza	7/2661	0.1185ha
ISiza	R/192	0.4097ha
ISiza	2/192	0.1542ha
ISiza	1/192	0.1650ha
ISiza	R/1253	1.1136ha
ISiza	6/1254	2.7839ha
ISiza	R/1255	2.8274ha
ISiza	R/1261	1.2705ha
ISiza	2/1262	0.6699ha
ISiza	1/1262	0.4933ha
ISiza	1/1263	0.2514ha
ISiza	R/5/1255	0.6378ha
ISiza	1272	1.1362ha
ISiza	1274	2.6029ha
ISiza	3094	2.8381ha
ISiza	10/3/166	0.0923ha
ISiza	11/4/166	0.1522ha
ISiza	12/5/166	0.3004ha
ISiza	13/5/166	0.1782ha

Ubukhulu bendawo: 60, 4525 ha

G. NDABANDABA
UNgqongqoshe wezoLimo kanye nezeMvelo

No. 871, 2006 1 June 2006

DEPARTMENT OF AGRICULTURE AND ENVIRONMENTAL AFFAIRS

NOTICE IN TERMS OF SECTION 3(2)(A) OF THE KWAZULU-NATAL NATURE CONSERVATION MANAGEMENT ACT

I, Gabriel Ndabandaba, Minister of Agriculture and Environmental Affairs under the authority and in terms of the powers conferred on me by section 3(2)(a) of the KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997), do hereby dual proclaim the Ophathe Game Reserve and the Emakhosini Heritage Park to be called the Emakhosini-Ophathe Heritage Park described hereunder as a protected area:

Description of the Ophathe Game Reserve

The farms situated east of the new Ulundi to Melmoth Road P52

The farm WITVOLOOS 6553	- sub-division 1	971,246 ha
	- sub-division 3	394,6235ha
The farm WELTEVREDEN 6113	- Remainder	800,2653ha
	- sub-division 1	727,7468ha
The farm MARS 12874		895,9748ha
The farms DOORNHOEK 15736 and DOORNHOEK 6112		2 600,1428ha
The farm STERKFONTEIN 6111		1 565,0699ha

APPENDIX B

The farm STOCKVILLE 13904		600,4723ha
Overvloed 7432 portion of remainder		270,0000ha
Witvoloos 453 portion	- sub-division 2	290,0000ha
Extent of area :		8 825,5400ha

Description Emakhosini Heritage Park

Overvloed 441	- Remainder	824,9365ha
	- sub-division 5	303,3033ha
Doornkop 20	- Remainder	292,7676ha
	- Remainder 1	243,0713ha
	- sub-division 2	242,8116ha
	- sub-division 3	0,8094ha
	- sub-division 4 of 1	243,027 ha
Extent of area:		2 150,7267ha

G. NDABANDABA
Minister of Agriculture and Environmental Affairs

No. 871, 2006 1 Junie 2006

DEPARTEMENT VAN LANDBOU EN OMGEWINGSAKE

KENNISGEWING INGEVOLGE ARTIKEL 3(2)(A) VAN DIE KWAZULU-NATAL WET OP NATUURBEWARINGSBESTUUR

EK, Gabriel Ndabandaba, Minister van Landbou en Omgewingsaangeleenthede verklaar hierby kragtens die bevoegdheid en ingevolge die magte aan my verleen by artikel 3(2)(a) van die KwaZulu-Natal Wet op Natuurbewaringsbestuur, 1997 (Wet No. 9 van 1997) dat die Opathe Wildresrevaat en die Emakhosini Erfenispark bekend sal staan as die Emakhosini-Opathe Erfenispark en laasgenoemde, soos hieronder beskryf, 'n beskermde gebied:

Beskrywing van die Ophathe Wildreservaat

Die plase gelee oos van die nuwe Pad P52 tussen Ulundi en Melmoth

Die plaas WITVOLOOS 6553	- onderverdeling 1	971,246 ha
	- onderverdeling 3	394,6235 ha
Die plaas WELTEVREDEN 6113	- Restant	800,2653 ha
	- Onderverdeling 1	727,7468 ha
Die plaas MARS 12874		895,9748 ha
Die plase DOORNHOEK 15736 en DOORNHOEK 6112		2 600,1428 ha
Die plaas STERKFONTEIN 6111		1 565,0699 ha
Die plaas STOCKVILLE 13904		600,4723 ha
Overvloed 7432 gedeelte van restant		270,0000 ha
Witvoloos 453 gedeelte	- onderverdeling 2	290,0000 ha
Omvang van gebied:		**8 825,5400 ha**

Beskrywing Emakhosini Erfenispark

Overvloed 441	- Restant	824,9365 ha
	- onderverdeling 5	303,3033 ha
Doornkop 20	- Restant	292,7676 ha
	- Restant 1	243,0713 ha
	- onderverdeling 2	242,8116 ha
	- onderverdeling 3	0,8094 ha
	- onderverdeling 4 van 1	243,027 ha
Omvang van gebied:		**2 150,7267 ha**

G. NDABANDABA
Minister van Landbou en Omgewingsake

No. 871, 2006 1 kuNhlangulana 2006

UMNYANGO WEZOLIMO KANYE NEZEMVELO

ISAZISO NGOKUHAMBISANA NESIGABA 3(2)(A) SOMTHETHO WOKUPHATHWA KOKONGIWA KWEZEMVELO WAKWAZULU-NATALI

MINA Gabriel Ndabandaba, uNgqongqoshe wezoLimo nezeMvelo ngaphansi kwegunya namandla enginikeziwe yisigaba 3(2)(a) soMthetho wokuPhathwa koKongiwa kweMvelo waKwaZulu-Natali, 1997 (uMthetho No. 9 ka-1997), ngalokhu ngimemezela ngokusemthethweni i-Ophathe Game Reserve kanye neMakhosini Heitage Park ezizobizwa ngokuthi Emakhosini-Ophathe Heritage Park ezichazwe ngezansi njengezindawo ezivikelekile:

Ukuchazwa kwePhathe Game Reserve

Amapulazi angasempumalanga yomgwaqo omusha u-P52 phakathi koLundi ne-Melmoth.

Ipulazi i-WITVOLOOS 6553	- Isiqeshana 1	971, 246 ha
	- Isiqeshana 3	394,6235ha
Ipulazi i-WELTEVREDEN 6113	- Insalela	800,2653ha
	- Isiqeshana 1	727,7468ha
Ipulazi i-MARS 12874		895,9748ha
Amapulazi i-DOORNHOEK 15736 ne-DOORNHOEK 6112		2 600,1428ha
Ipulazi i-STERKFONTEIN 6111		1 565,0699ha
Ipulazi i-STOCKVILLE 13904		600,4723ha

APPENDIX B

Ingxenye yensalela ye-Overvloed 7432		270,0000ha
Ingxenye ye-Witvoloos 453	- isiqeshana 2	290,0000ha
Ubukhulu bendawo		**8 825,5400ha**
Ukuchazwa kweMakhosini Heritage Park		
Overvloed 441	- Insalela	824,9365ha
	- Isiqeshana 5	303,3033ha
Doornkop 20	- Insalela	292,7676ha
	- Isiqeshana 1	243,0713ha
	- Isiqeshana 2	242,8116ha
	- Isiqeshana 3	0,8094ha
	- Isiqeshana 4 sika- 1	243,027 ha
Ubukhulu bendawo:		**2 150,7267ha**

G. NDABANDABA
UNgqongqoshe wezoLimo kanye nezeMvelo

No. 872, 2006 1 June 2006

DEPARTMENT OF LOCAL GOVERNMENT AND TRADITIONAL AFFAIRS

NOTICE IN TERMS OF SECTION 23 OF THE TOWN PLANNING ORDINANCE, 1949: APPROVAL OF PRIVATE TOWNSHIP; ERVEN 466-551 PORT ZIMBALI (ERF 465 PORT ZIMBALI), KWADUKUZA MUNICIPALITY

IN my capacity as Deputy Manager: Development Administration in the KwaZulu-Natal Department of Local Government and Traditional Affairs, under powers vested in me by section 23 of the Town Planning Ordinance, 1949 (Ordinance No. 27 of 1949), read with delegation 9 of Part VII of Chapter B of the General Delegations of Authority, issued by the KwaZulu-Natal Member of the Executive Council responsible for local government and housing in terms of section 2 of the KwaZulu-Natal Delegation of Powers Act, 1994 (Act No. 8 of 1994), I hereby declare the private township of Erven 466-551 Port Zimbali (Erf 465 Port Zimbali), Registration Division FU, KwaDukuza Municipality, Province of KwaZulu-Natal, to be an approved private township.

Given under my hand at Durban this 25th day of May, Two thousand and Six.

G. K. SUZOR
Deputy Manager: Development Administration
Coastal Implementation Office
File reference: 2004/191

No. 872, 2006 1 Junie 2006

DEPARTEMENT VAN PLAASLIKE REGERING EN TRADISIONELE SAKE

KENNISGEWING INGEVOLGE ARTIKEL 23 VAN DIE DORPSBEPLANNINGSORDONNANSIE, 1949: GOEDKEURING VAN 'N PRIVAATDORP; ERWE 466-551 PORT ZIMBALI (ERF 465 PORT ZIMBALI) MUNISIPALITEIT KWADUKUZA

IN my hoedanigheid as Adjunkbestuurder: Ontwikkelingsadministrasie (Kusstreek Implementeringskantoor) in die KwaZulu-Natal Departement van Plaaslike Regering en Tradisionele Sake, verklaar ek hierby kragtens die bevoegdheid aan my verleen by artikel 23 van die Dorpsbeplanningsordonansie, 1949 (Ordonnansie No. 27 van 1949), saamgelees met delegasie 9 van deel VII van hoofstuk B van die Algemene Delegasies van Bevoegdheid, uitgereik deur die KwaZulu-Natal lid van die Uitvoerende Raad verantwoordelik vir plaaslike regering en behuising ingevolge artikel 2 van die KwaZulu-Natal Wet op die Delegering van Bevoegdhede, 1994 (Wet No. 8 van 1994), dat die privaatdorp Erwe 466-551 Port Zimbali (Erf 465 Port Zimbali), Registrasie-afdeling FU, Munisipaliteit KwaDukuza, provinsie KwaZulu-Natal, 'n goedgekeurde privaatdorp is.

Gegee onder my hand te Durban op hierdie 25ste dag van Mei, Tweeduisend-en-ses.

G. K. SUZOR
Adjunkbestuurder: Ontwikkelingsadministrasie
Kusstreek Implementeringskantoor
Lêerverwysing: 2004/191

No. 872, 2006 1 kuNhlangulana 2006

UMNYANGO WOHULULMENI BASEKHAYA KANYE NEZENDABUKO

ISAZISO NGOKWESIGABA 23 SE-ODINENSI YOKUHLELWA KWEDOLOBHA, 1949: UKUVUNYWA KWELOKISHI ELIZIMELE: IZIZA 466-551 E-PORT ZIMBALI (YESIZA 465 E-PORT ZIMBALI) KUMASIPALA WAKWADUKUZA

ESIKHUNDLENI sami njengeSekela loMphathi: wokuPhathwa kweNtuthuko eMnyangweni woHulumeni baseKhaya kanye nezeNdabuko, ngaphansi kwamandla engiwanikezwe yisigaba 23 se-Odinensi yokuHlelwa kweDolobha, (i-Odinensi No. 27 ka- 1949), ifundwa noMthetho wokuDluliselwa kwaMandla 9 weNgxenye VII yeSahluko B seGunya lokuDluliselwa kwaMandla okuVamile eMnyangweni wezeNdabuko kanye noHulumeni baseKhaya KwaZulu-Natali, esikhishwe yiLungu loMkhandlu oPhethe KwaZulu-Natali elibhekele ohulumeni basekhaya ngokuhambisana nesigaba 2 soMthetho wokuDluliselwa kwaMandla waKwaZulu-Natali, 1994 (uMthetho No. 8 ka 1994), ngalokhu ngimemezela ilokishi elizimele leZiza- 466-551 e-Port Zimbali (iSiza 465 e-Port Zimbali), isiGaba sokuBhaliswa esingu-FU, ngaphansi kukaMasipala waKwaDukuza, esiFundazweni saKwaZulu-Natali, njengelokishi elizimele elivunyiwe.

Sisayinwe eThekwini ngalolu suku lwama-25 kuNhlaba, oNyakeni weziNkulungwane eziMbili nesiThupha.

G. K. SUZOR
iSekela loMphathi: wokuPhathwa kweNtuthuko
eHhovisi lokuQaliswa kweziNhlelo elingasoGwini
iNkomba yeFayela: 2004/191

Appendix C: List of statutes to which Ophathe Game Reserve is subject

Biodiversity and Cultural Resource Management and Development:

- Animals Protection Act [No. 71 of 1962]
- Atmospheric Pollution Prevention Act [No. 45 of 1965]
- Conservation of Agricultural Resources Act [No. 43 of 1983]
- Constitution of the Republic of South Africa [No. 108 of 1996]
- Criminal Procedures Act [1977]
- Environment Conservation Act [No. 73 of 1989]
- Forest Act [No. 122 of 1984]
- Hazardous Substances Act [No. 15 of 1973]
- KwaZulu Nature Conservation Act [No. 8 of 1975]
- KwaZulu-Natal Heritage Management Act [No. 10 of 1997]
- KwaZulu-Natal Nature Conservation Management Act [No. 9 of 1997]
- Marine Living Resources Act [No. 18 of 1998]
- National Environmental Management Act [No. 107 of 1998]
- National Environmental Management: Biodiversity Act [No. 10 of 2004]
- National Environmental Management Integrated Coastal Management Act [No. 24 of 2008]
- National Environmental Management: Protected Areas Act [No. 57 of 2003]
- National Environmental Management Waste Act [No. 59 of 2008]
- 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]
- World Heritage Convention Act [No. 49 of 1999]

General Management:

- Development Facilitation Act [No. 67 of 1995]
- Disaster Management Act [No. 57 of 2002]
- Fire Brigade Services Act [No. 99 of 1987]
- KwaZulu-Natal Planning and Development Act [No. 5 of 1998]
- Land Reform Labour Tenant Act [No. 3of 1996]
- 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]
- Promotion of Access to Information Act [No. 2 of 2000]
- Promotion of Administrative Justice Act [No.3 of 2000]
- Restitution of Land Rights Act [No.22 of 1994]
- Spatial Planning and Land Use Management Act [No.16 of 2013]
- Water Services Act [No. 108 of 1997]
- National Tourism Act [No. 3 of 2014]

Financial Management:

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

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]
- 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]

Appendix D: Management Guidelines for Heritage Sites in the EOHP

MANAGEMENT GUIDELINES FOR HERITAGE SITES IN THE EOHP

Compiled by :
James van Vuuren
Deputy Director: Support, Professional and Technical Services
Amafa AkwaZulu Natali

Ver 1: June 2006

MANAGEMENT GUIDELINES FOR HERITAGE SITES IN THE EOHP

INTRODUCTION

The EOHP is jointly managed by Amafa and EKZNW. Three major management components exist – Biodiversity, Heritage and Tourism. Amafa is responsible for the heritage management component. The heritage sites in the Park require various degrees of maintenance, a responsibility delegated by Amafa to the Park Manager. This document provides a tool to guide maintenance staff in carrying out their responsibilities within the park. The document should be reviewed on a regular basis and updated when necessary.

While an attempt should be made to keep all sites in excellent condition, until such time as resource shortages are addressed, those sites that are regularly visited by the public will receive more attention.

SITES COVERED BY ROUTINE MAINTENANCE PLAN

1. Mgungundlovu reconstruction.
2. Spirit of the Emakhosini
3. Grave of Inkosinkulu
4. Grave of King Senzangakhona
5. Grave of Mageba
6. Grave of Phunga
7. Grave of Jama
8. Grave of Ndaba
9. Grave of Zulu
10. Grave of King Dinuzulu
11. Grave of Piet Retief
12. Fort Mtojaneni 1 &2
13. King Dingane Spring
14. Battle of Gqokli viewsite
15. Battle of Ophathe viewsite
16. Fort Evelyn
17. Grave of Drum Major Bell
18. Biyela Ancestral sites
19. Pleistocene paleosols
20. Sites of private land

CHAIN OF COMMAND AND MONITORING

The implementation these guidelines is the responsibility of the Senior Heritage Officer: EOHP. The Senior Heritage Officer reports to the Park Manager: EOHP. An advisory service is provided by the Sub-Directorate: Support, Professional and Technical; Services: Amafa, which is responsible for ad-hoc monitoring of the implementation of these guidelines.

1. Mgungundlovu

The Mgungundlovu site requires ongoing maintenance. Being an archaeological site, special care needs to be taken not to damage archaeological features. The maximum number of huts to be maintained must be identified. The hut building process is of particular interest to the public and an attempt should be made to have staff working on hut building / repair of at all times during the year. This also communicates a message of constant care to visitors.
Public access to all but a few huts should be prevented. Huts for public access are the King's hut, brewing hut and one other that demonstrates the hut floor, hearth and floor polishing and other hut features. Two huts for storage of thatch should be identified and reserved solely for this purpose.

Identified Maintenance Requirements:

- Maintenance of huts
- Maintenance of palisade
- Protection of archaeological features
- Fire protection measures
- Interpretation.
- Mowing
- Litter removal

Amafa Maintenance Schedule:

Daily:	Inspect site, pick up litter.
	Hut repairs, building
	Check all self-guided trail markers are in place.
	Check all information signage is in place
Weekly:	Empty refuse bins.
Monthly:	Check hut building equates to annual plan
	Check grass ropes on huts, replace where necessary
	Mow interior of royal enclosure
	Check protective geotextile covers and repair where necessary
	Mow access to peripheral archaeological features
	Replace/repair broken palisade
	Treat palisade for insects
	Ensure Fire fighting equipment is operational and in place.
	Ensure necessary firebreaks around site are effective
Annual	February Support Services Meeting - Prepare new hut schedule for following year.
	Prepare firebreak around entire site

2. Spirit of Emakhosini

This site is very well visited and should be kept in excellent condition at all times.

Identified Maintenance Requirements:

- Maintenance of memorial
- Maintenance of pathway
- Maintenance of displays
- Maintenance of buildings
- Fire protection measures
- Mowing
- Litter removal

Amafa Maintenance Schedule:

Daily:	Inspect site, pick up litter.
	Ensure adequate supply of leaflets
	Check all information signage is in place.
	Check displays and report defects to supervisor. Any defect to be attended to at once.

	Clean display case glass
	Clean toilets and ensure soap and towel is available
	Check for any damage to memorial and report to supervisor
Weekly:	Empty refuse bins.
	Replenish water supply
	Sweep path
Monthly:	Mow area around toilets and reception.
	Ensure that water drains on "horns" are free of blockage
	Ensure necessary firebreaks around site are effective
	Repair damage to base of memorial and stone work.
6 monthly	Clear cattle grid trap if necessary
Annual	Prepare firebreak around entire site
Every 2 years	Repaint interior of toilets and reception

3. Grave of Nkosinkulu

Because of its proximity to the Mgungundlovu this grave should be kept in excellent condition at all times. Care must be taken not to alter the original grave.

Identified Maintenance Requirements:

- Mowing
- Litter removal

Amafa Maintenance Schedule:

Daily:	Inspect site, pick up litter.
Monthly:	Mow a 10 m radius around the grave, more frequently if necessary in the rainy season.
	Remove weeds from the grave.

4. Grave of King Senzangakhona

This site is well visited and should be kept in excellent condition at all times. Care must be taken not to alter the original grave.

Identified Maintenance Requirements:

- Mowing
- Litter removal
- Path to grave
- Steel palisade

Amafa Maintenance Schedule:

Weekly:	Inspect site, pick up litter.
	Clean memorial stone with dry cloth
Monthly:	Mow a 3 m radius around the grave, more frequently if necessary in the rainy season.
	Remove weeds from the grave.
	Clear path from parking area to grave
	Repair access road – fill in water damage before serious problems arise.
Annual	Repaint path markers
	Silver paint steel palisade

5. Grave of King Jama

While the site is currently not well visited, it is after the above graves the next most visited and should be kept in a good condition. Care must be taken not to alter the original grave. During 2006 a memorial stone will be erected at the site

Identified Maintenance Requirements:

- Mowing
- Litter removal
- Path to grave
- Steel palisade
- Memorial

Amafa Maintenance Schedule:

Weekly:	Inspect site, pick up litter.
Monthly:	Mow a 3 m radius around the grave, more frequently if necessary in the rainy season. Remove weeds from the grave. Clear path from parking area to grave
Annual	Repaint path markers Silver paint steel palisade

6. Grave of King Ndaba

While the site is currently not well visited, it is after the above graves the next most visited and should be kept in a good condition. Care must be taken not to alter the original grave

Identified Maintenance Requirements:

- Mowing
- Litter removal
- Path to grave
- Steel palisade

Amafa Maintenance Schedule:

Monthly:	Mow a 3 m radius around the grave, more frequently if necessary in the rainy season. Remove weeds from the grave.
Annual	Repaint path markers Silver paint steel palisade

7. Graves of Kings Phunga, Zulu and Mageba

Until the Spine raod is complete, public access to these sites is unlikely. These sites shoulkd be maintained at least every three months. Care must be taken not to alter the original graves

Identified Maintenance Requirements:

- Mowing
- Litter removal
- Steel palisade

Amafa Maintenance Schedule:

Management Guidelines: Heritage sites in the EOHP

3- Monthly:	Mow a 3 m radius around the grave, more frequently if necessary in the rainy season. Remove weeds from the grave. Apply herbicide within palisade area where applicable
Annual	Silver paint steel palisade

8. Grave of King Dinuzulu

The grave should be kept in a good condition. Care must be taken not to alter the original grave

Identified Maintenance Requirements:

- Mowing
- Litter removal
- Path to grave
- Steel palisade

Amafa Maintenance Schedule:

Monthly:	Mow a 3 m radius around the grave, more frequently if necessary in the rainy season. Remove weeds from the grave.
Annual	Silver paint steel palisade

9. Grave of Piet Retief

This site is very well visited and should be kept in excellent condition at all times.

Identified Maintenance Requirements:

- Mowing
- Litter removal
- Path to grave
- Steel palisade
- Structural maintenance

Amafa Maintenance Schedule:

Weekly:	Inspect site, pick up litter. Empty litter bin Clean memorial stones with dry cloth
Monthly:	Ensure that an area around the base memorial stone is kept short at all times Remove weeds from the grave. Clear path from parking area to grave Repair access road – fill in water damage before serious problems arise.
Annual	Silver paint steel palisade Silver paint gate

Management Guidelines: Heritage sites in the EOHP

10. Fort Mtojaneni 1 &2

This site is very well visited and should be kept in excellent condition at all times. While grass cutting frequency may be reduced in Winter, more frequent cutting is required in growing months.

Identified Maintenance Requirements:

- Mowing
- Litter removal
- Paths to fort 1

Amafa Maintenance Schedule:

Monthly:	Mow parking area and path to fort 1.
	Brush cut interior of fort 1
	Remove alien vegetation and weeds from interior of fort 1.
	Mow interior of fort 2 (entrance to lodge).

11. King Dingane Spring

This site is very well visited and should be kept in excellent condition at all times. While grass cutting frequency may be reduced in Winter, more frequent cutting is required in growing months.

Identified Maintenance Requirements:

- Mowing
- Litter removal
- Paths to fort 1

Amafa Maintenance Schedule:

Monthly:	Mow parking area.
	Mow path to site
	Brush cut 3 m radius from spring
	Remove alien vegetation and weeds from path
Annual	Paint parking demarcation stones
	Silver paint turnstile.

12. View sites for Battle of Gqokli and Ophathe

Identified Maintenance Requirements:

- Litter removal
- Paths to sites
- Interpretation

Amafa Maintenance Schedule:

Monthly:	Check interpretation and report any defect to supervisor
	Check signage and report defect
	Repair damage to parking bollard fence
Annual	paint path markers

Management Guidelines: Heritage sites in the EOHP

13. Fort Evylyn and Grave of Drum Major Bell

Until such time as these sites are open to the public attention to these sites can be limited to bi-annual inspection by the manager and monthly inspection and report back by field ranger staff.

14. Biyela Ancestral Site

Maintenance of this site is to be determined in consultation with the Biyela Clan. Amafa will carry out basic maintenance on a bi-annual basis. The clan should to assist if a greater maintenance frequency is expected.

15. Pleistocene Paleosols

No maintenance of these sites is required. The manager should however report on activities which pose a threat to these features. Examples are creation of illegal tracks through these features.

16. Sites on private property

KwaBulawayo 1
Makheni
Dirkie Uys
Miscellaneous Forts

No management guidelines are in place for these sites. At this stage they are protected from interference by the owners in terms of the general protections of the Heritage Act.

===

Appendix E: Environmental impact assessment regulations listed activities in terms of Regulation R. 985, Listing Notice 3

The purpose of this Notice is to list activities where environmental authorisation is required prior to commencement of that activity in specific identified geographical areas only.

The following activities are regulated in terms of Listing Notice 3:

1. **T**he development of billboards exceeding 18 square metres in size outside urban areas, mining areas or industrial complexes.
2. The development of reservoirs for bulk water supply with a capacity of more than 250 cubic metres.
3. The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower- a) is to be placed on a site not previously used for the purpose; and b) will exceed 15 metres in height - but exclude attachments to existing buildings and masts on rooftops.
4. The development of a road wider than 4 metres with a reserve less than 13,5 metres.
5. The development of resorts, lodges, hotels and tourism or hospitality facilities that sleep less than 15 people.
6. The development of resorts, lodges, hotels and tourism or hospitality facilities that sleeps 15 people or more.
7. The development of aircraft landing strips and runways 1.4 kilometres and shorter
8. The development and related operation of above ground cableways and funiculars.
9. The development and related operation of zip-lines or foefie-slides exceeding 100 metres in length.
10. The development of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.
11. The development 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.
12. The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.
13. The development and related operation of facilities of any size for any form of aquaculture.
14. The development of - a) canals & channels exceeding 10 square metre in size; b) bridges exceeding 10 square metres in size; c) dams, where the dam including infrastructure & water surface area exceeds 10 square metres in size; d) weirs, where the weir including infrastructure & watersurface area exceeds 10 square metres in size; bulk storm water outlet structures exceeding 10 square metres in size; e) marinas, slipways & jetties exceeding 10 square metres in size; f) buildings & boardwalks exceeding 10 square metres in size, g) infrastructure or structures with a physical footprint of 10 square metres or more; Where such a development occurs - a) within a watercourse; b) in front of a development setback; c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; Excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.
15. The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, such land was zoned open space, conservation or had an equivalent zoning, on or after 02 August 2010.
16. The expansion of reservoirs for bulk water supply where the capacity will be increased by more than 250 cubic metres.
17. The expansion of a resort, lodge, hotel and tourism or hospitality facilities where the development footprint will be expanded.
18. The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.
19. 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.

20. The expansion and related operation of above ground cableways and funiculars where the development footprint will be increased.
21. The expansion 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.
22. The expansion of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage facilities or infrastructure will be expanded by 30 cubic metres or more but no more than 80 cubic metres.
23. The expansion of - a) canals & channels where the canal or channel is expanded by 10 square metres or more in size; b) bridges expanded by 10 square metres or more in size; c) dams, where the dam is expanded by 10 square metres or more in size; d) weirs, where the weir expanded by 10 square metres or more in size; bulk storm water outlet structures where the structure is expanded by 10 square metres or more in size; e) marinas, slipways & jetties where expanded by 10 square metres or more in size; f) buildings & boardwalks where expanded by 10 square metres or more in size, g) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; Where such a development occurs - a) within a watercourse; b) in front of a development setback adopted in the prescribed manner; c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; Excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.
24. The expansion and related operation of facilities of any size for any form of aquaculture.
25. The expansion and related operation of zip-lines or foefie-slides, where the zip-line or foefie-slide is expanded by 100 metres in length or more.
26. Phased activities listed in Listing Notice 3 which commenced on or after December 2014; Phased activities ilisted in any other NEMA notice on or after the effective date; where any phase of the activity may be below the threshold but where a combination of phases, including extensions or expansions will exceed a specified threshold; Excluding activities 7, 8, 11, 13, 17,, 20, 21 & 24 in Listing Notice 3.

APPENDIX E

Geographical areas based on environmental attributes		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
A protected area identified in terms of NEMPAA																										
A protected area identified in terms of NEMPAA, excluding conservancies																										
World heritage Site																										
Outside urban areas	a) Areas within 10 kilometres from national parks or worl heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve																									
	b) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined																									
	c) Areas within 100 metres of a water course or wetland																									
	d) Areas within 100 metres of a watercourse																									
	e) Areas within 500 metres from protected areas identified in terms of NEMPAA																									
	e) All areas outside urban areas																									
	f) Within areas of indigenous vegetation																									
	g) Areas within 100 metres of the edge of a watercourse																									
In urban areas	a) Areas zoned for use as public open space																									
	b) Areas seawards of the development setback line or within 100 metres from the high-water mark of the sea if no such development setback line is determined																									
	c) Within urban protected areas																									
	d) Areas within 1 kilometre from protected areas identified in terms of NEMPAA																									
	e) Areas within 500 metres from protected areas identified in terms of NEMPAA																									
	f) In an estuarine functional zone																									
	g) A protected area identified in terms of NEMPAA, excluding conservancies																									
	h) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans																									
	i) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority																									
	j) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose																									
	k) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined																									
	l) Areas within 32 metres from the edge of a watercourse																									
Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve																										
Sites or areas identified in terms of an international convention																										
Provincial Protected Area Expansion Strategy Focus areas																										
Trans-frontier protected areas managed under international conventions																										
Community Conservation Areas																										
Biodiversity Stewardship Programme Biodiversity Agreement areas																										
Core areas in biosphere reserves																										
In an estuarine functional zone																										
Within 500 metres of an estuarine functional zone																										
Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, or zoned for a conservation purpose																										
Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined																										
Within any critically endangered or endangered ecosystem listed in terms of Section 52 of NEMBA or prior to the publicationof such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004																										
Within the littoral active zone or 100 metres inland from the high-water mark of the sea or an estuarine functional zone, whichever distance is greater, excluding where such removal will occur behind the development setback line on erven in urban areas																										
On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning																										
Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined																										
Critical biodiversity areas or ecological support areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans																										
Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans																										
Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority																										

APPENDIX F

Appendix F: List of policies, servitudes, unpublished documents and supporting documentation

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

Item:
1. Ezemvelo KZN Wildlife Corporate Strategic Plan and Performance Plan for 2015 - 2020
2. Ezemvelo KZN Wildlife Corporate Policies and Procedures (Norms & Standards) listed in the table below
3. Ezemvelo KZN Wildlife Biodiversity Database Checklists for Ophathe Game Reserve
4. Proclamations of Ophathe Game Reserve
5. Ophathe Game Reserve Public Participation Report, 2016

Listed below are 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.

APPENDIX F

CORPORATE AFFAIRS	
B 2	Access to Ezemvelo KZN Wildlife Areas and Employment
B 5	Outsourcing of Functions and Services
B 7	Monuments, Memorials and Names of Protected Areas under the control of Ezemvelo KZN Wildlife
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
INTERNAL AUDIT	
C 5	Management Control
Biodiversity conservation operations	
1. NATURAL RESOURCE SUSTAINABILITY	
Threatened Species and Ecosystems	
D 1.1	Disposal of Black Rhino
D 1.2	Disposal of Surplus White Rhino
D 1.3	Strategy for the Management of Southern White Rhino in KwaZulu-Natal
D 1.4	Strategy for the Biological Management of Black Rhino in KwaZulu-Natal
D 1.5	Rhinoceros Products
D 1.6	Crocodilians
D 1.7	Cycads
D 1.8	Disposal of Threatened Species
Exotic and Invasive species	
D 1.9	Release of Alien Species
D 1.10	Control Measures for Red-billed Quelea
D 1.12	Grass Carp
D 1.13	Establishment of Alien Plantations
Migratory Species	
D 1.14	Black Wildebeest and Blue Wildebeest Hybridization and Conservation
D 1.15	Permit authorising the collection of Biological Material within Board Areas
2. CONSERVATION EFFECTIVENESS	
Strategic applications	
D 2.1	Involvement of the KwaZulu-Natal Nature Conservation Board in Project 8 of the MAB (Man and Biosphere) Programme
Conservation management: protected areas management	
D 2.2	Management of Wilderness Areas
D 2.3	Protected Area Development
D 2.4	Prohibition of Works and Servitudes in Board Areas
D 2.5	Zonation and Regulations for the control of off-road vehicles on beaches controlled by the Board
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
Integrated environmental management	
D 2.12	Integrated Environmental Management - incorporating the procedure for the assessment of the impact of proposed development projects on nature conservation concerns.
D 2.13	Precautionary Principle
D 2.14	Shark Net Installations
D 2.15	Bioprospecting in KwaZulu-Natal
D 2.17	Use of Pesticides by the Ezemvelo KZN Wildlife: Safety to Humans and the Environment
D 2.18	Interference with the Mouth of a Lagoon or River (Breaching)
Ex Situ Wild Animal Management	
D 2.21	Re-establishment of Terrestrial Mammals in Board Areas
D 2.22	Translocation of Animals
D 2.25	Elephant Introductions and Elephant in Enclosures
D 2.27	Introduction and Keeping of Large Predators in Enclosures in KZN
D 2.28	Use of Narcotic Drugs
D 2.29	Falconry
Human Animal Conflict - Inside and Outside Protected Areas	
D 2.30	Disposal of Leopard from Ezemvelo KZN Wildlife Protected Areas
D 2.31	Problem Animal Control
D 2.32	Compensation claims in respect of damage caused by Lion, Cheetah, Wild Dog and Elephant to Stock and Crops
D 2.33	Instances of Death as a result of an Unprovoked Attack by a Wild Animal Normally contained and originating from within a Fenced Protected Area under the Control of the KwaZulu-Natal Nature Conservation Board

APPENDIX F

Environmental Awareness	
D 2.34	Environmental Education Policy
3. BIODIVERSITY PROTECTION	
Co-management	
D 3.1	Supply of Game to Conservancies, Community Conservation Areas and Biosphere Reserves in KwaZulu-Natal
D 3.2	Establishment and Management of Community Conservation Reserves (CCR)
D 3.4	Community Conservation Programmes
D 3.5	Neighbours' Access to Board Protected Areas
D 3.6	Relationship with Local Boards
D 3.7	Conservation Partnerships Between KwaZulu-Natal Nature Conservation Board and Adjacent Landowners
D 3.8	Community Trust
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
Resource use benefits	
D 3.12	Disposal of Venison from Ezemvelo KZN Wildlife Management Operations
D 3.13	Sustainable use of wildlife resources
D 3.14	Freshwater Angling
D 3.15	Freshwater species utilisation
D 3.16	Use of plant resources from protected areas
D 3.17	Use of doomed biological material
D 3.19	Provision of hunting by Ezemvelo KZN Wildlife
4. RELATIONSHIPS	
D 4.1	Neighbour Relations
D 4.2	Participation - Non Government Organisations
D 4.3	Data Access
D 4.4	Consultation and Communication with Stakeholders: Policy and Guidelines
COMMERCIAL OPERATIONS	
E 1	Concessions for Welfare Groups
E 2	Hiking and Mountaineering
E 3	Educational Concessions
E 4	Club Facilities within Board Areas
E 5	Hutted Camps
E 6	Joint Venture Scheme
E 7	Allocation of Sites in terms of the Joint Venture Scheme
E 8	Access to Protected Areas through Unofficial Entry Points
E 9	Visitor Facilities Management by Ezemvelo KZN Wildlife.
E 10	Lease of Lakeshore at State Dam Protected Areas
E 11	Execution, Control and Management of Leases and Concession Contracts (excluding Biodiversity Conservation Partnerships and Leases of Wildlife)
E 12	Private Sector Reservations Policy
E 13	Partnerships for Eco-Tourism Development within or Adjacent to Protected Areas
E 14	Discounting of Tariffs for Walk-in Guests
E 15	Ecotourism Discounting Strategy
E 16	Travel Trade Commissions: Tour Operator/ Travel Agency
E 17	Policy and Procedure for the establishment and monitoring of Commercial Operations Public Private Partnership (PPP) Agreements

APPENDIX F

E 18	Administrative and operational policy on Professional hunting in South Africa
E 19	Commercialisation

Appendix G: Species list for Ophathe Game Reserve

The species lists was sourced from the Ezemvelo KZN Wildlife biodiversity database to ensure that the information presented is the most current and accurate, both in terms of the species present or absent in the protected area and their threatened status.

Faunal Species List:

Taxon Name	English Name	Status (SARDB)
Amphibians		
Hyperolius marmoratus	Painted Reed Frog; Marbled Reed Frog; Striped Reed Frog	Least Concern
Hyperolius pusillus	Water Lily Frog; Dwarf Reed Frog; Lily Pad Frog	Least Concern
Kassina senegalensis	Bubbling Kassina; Senegal Kassina	Least Concern
Ptychadena oxyrhynchus	Sharp-nosed grass frog	Least Concern
Chiromantis xerampelina	Southern Foam Nest Frog; African Gray Treefrog; Grey Foam-nest Frog	Least Concern
Birds		
Bucorvus leadbeateri	Southern Ground-Hornbill, Ground Hornbill	Endangered
Gyps coprotheres	Cape vulture	Endangered
Polemaetus bellicosus	Martial eagle	Endangered
Circus ranivorus	African Marsh-Harrier	Endangered
Schoenicola brevirostris	Broad-tailed Warbler	Least Concern
Anthropoides paradiseus	Blue Crane	Near Threatened
Eupodotis senegalensis	White-bellied Korhaan	Vulnerable
Tyto capensis	African Grass-Owl, Grass Owl	Vulnerable
Sagittarius serpentarius	Secretarybird	Vulnerable
Geronticus calvus	Southern Bald Ibis, Bald Ibis	Vulnerable
Earthworms and Leeches		
Tritogenia ngomensis	Ngome earthworm	
Proandricus sp.		
Insects		
Damalis femoralis	Spike-femured robberfly	
Calleagris kobela	Mrs Raven's Flat	
Cassionympha cassius	Rainforest Brown	
Aloeides swanepoeli	Swanepoel's Copper	
Spialia depauperata australis	Wandering Sandman	
Charaxes druceanus druceanus	Silver-barred Charaxes	
Acraea aglaonice	Clear-spotted Acraea	
Acraea natalica	Natal Acraea	
Acraea oncaea	Window Acraea	
Byblia ilithyia	Spotted Joker	
Catopsilia florella	African Migrant	
Colotis auxo	Sulphur Orange Tip	
Hypolimnas misippus	Common Diadem	
Lachnoptera ayresii	Blotched Leopard	
Pardopsis punctatissima	Polka Dot	
Protogoniomorpha parhassus	Common Mother-of-Pearl	
Vanessa cardui	Painted Lady	

Actizera lucida	Rayed Blue	
Cacyreus lingeus	Bush Bronze	
Cacyreus marshalli	Common Geranium Bronze	
Iolaus sidus	Red-line Sapphire	
Lachnocnema durbani	D'Urban's Woolly Legs	
Lampides boeticus	Lucerne Blue	
Cigaritis natalensis	Natal Bar	
Zizina antanossa	Clover Blue	
Telchinia cabira	Yellow-banded Acraea	
Telchinia serena	Dancing Acraea	
Telchinia esebria	Dusky Acraea	
Papilio dardanus cenea	Mocker Swallowtail	
Papilio demodocus demodocus	Citrus Swallowtail	
Papilio nireus lyaeus	Green-banded Swallowtail	
Acraea neobule neobule	Wandering Donkey Acraea	
Belenois aurota aurota	Brown-veined White	
Belenois creona severina	African Common White	
Bicyclus anynana anynana	Squinting Bush Brown	
Bicyclus safitza safitza	Common Bush Brown	
Byblia anvatara acheloia	Common Joker	
Catacroptera cloanthe cloanthe	Pirate	
Charaxes brutus natalensis	White-barred Charaxes	
Charaxes jasius saturnus	Foxy Charaxes	
Charaxes varanes varanes	Pearl Charaxes	
Coeliades forestan forestan	Striped Policeman	
Colias electo electo	African Clouded Yellow	
Colotis antevippe gavisa	Red Tip	
Colotis eris eris	Banded Gold Tip	
Colotis euippe omphale	Smoky Orange Tip	
Danaus chrysippus orientis	African Monarch	
Eronia cleodora cleodora	Vine-leaf Vagrant	
Eurema brigitta brigitta	Broad-bordered Grass Yellow	
Eurytela hiarbas angustata	Pied Piper	
Gegenes niso niso	Common Hottentot Skipper	
Graphium leonidas leonidas	Veined Swordtail	
Mylothris agathina agathina	Common Dotted Border	
Pinacopteryx eriphia eriphia	Zebra White	
Precis octavia sesamus	Gaudy Commodore	
Anthene amarah amarah	Black-striped Hairtail	
Anthene definita definita	Common Hairtail	
Hypolycaena philippus philippus	Purple-brown Hairstreak	
Myrina silenus ficedula	Common Fig-tree Blue	
Tarucus sybaris sybaris	Dotted Blue	
Tuxentius melaena melaena	Black Pie	
Telchinia encedon encedon	Common Mimic Acraea	
Euchrysops osiris osiris		
Precis archesia archesia		
Junonia hierta cebrene	Yellow Pansy	
Junonia oenone oenone	Blue Pansy	
Deudorix penningtoni	Pennington's playboy	

Acraea aganice aganice		
Paralethe dendrophilus albina		
Paralethe dendrophilus indosa		
Chloroselas pseudozeretis pseudozeretis		
Axiocerses tjoane tjoane		
Axiocerses amanga amanga		
Dasophrys sp 1		
Philoliche aethiopica	African long-tongued tabanid fly	
Nemestrinid sp.		
Paralentula sp.		
Mammals		
Lycaon pictus pictus	African wild dog	Endangered
Panthera pardus melanotica	Leopard	
Raphicerus campestris	Steenbok	
Sylvicapra grimmia	Common duiker, Grey duiker	
Tragelaphus angasii	Nyala	
Tragelaphus scriptus	Bushbuck	
Aepyceros melampus melampus	Impala	
Alcelaphus buselaphus caama	Red hartebeest	
Connochaetes taurinus taurinus	Blue wildebeest	
Kobus ellipsiprymnus ellipsiprymnus	Waterbuck	
Oreotragus oreotragus transvaalensis	Klipspringer	
Redunca arundinum arundinum	Southern reedbuck	
Redunca fulvorufula fulvorufula	Mountain reedbuck	
Syncerus caffer caffer	African Buffalo	
Tragelaphus oryx oryx	Eland	
Tragelaphus strepsiceros strepsiceros	Greater Kudu	
Giraffa camelopardalis capensis	Giraffe	
Potamochoerus larvatus koiropotamus	Bushpig	
Phacochoerus africanus	Common warthog	
Papio hamadryas	Chacma baboon	
Equus quagga antiquorum	Plains Zebra	
Ceratotherium simum simum	White rhinoceros	
Diceros bicornis minor	Black rhinoceros	Vulnerable
Millipedes		
Ulodesmus natalensis natalensis		
Reptiles		
Chamaesaura macrolepis macrolepis	Large-scaled grass lizard	

Stigmochelys pardalis	Leopard tortoise; Mountain tortoise	
Kinixys natalensis	Kwazulu-Natal hinged-back tortoise; Natal hinged tortoise	
Slugs, snails, limpets		
Gittenedouardia arenicola		
Spiders, scorpions, ticks, mites		
Tusitala hirsuta		
Tusitala barbata		
Dresserus colsoni		
Gandanameno sp.		
Cambalida dippenaarae		

Flora Species List:

Taxon Name	English Name	Status (SARDB)
Euphorbia gueinzii var. gueinzii		Not Evaluated
Teramnus labialis		
Argyrolobium sp.		
Zornia sp.		
Indigofera hilaris		
Indigofera sp.		
Calpurnia sp.		
Chamaecrista plumosa		
Tephrosia sp.		
Vigna sp.		
Clutia sp.		
Phyllanthus sp.		
Thesium sp.		
Encephalartos natalensis	Natal giant cycad	Near Threatened
Rhus sp.		
Wahlenbergia sp.		
Sporobolus festivus		Least Concern
Aristida sp.		
Panicum natalense		Least Concern
Schizachyrium sanguineum		Least Concern
Trachypogon spicatus		Least Concern
Cymbopogon sp.		
Eragrostis sp.		
Loudetia simplex		Least Concern
Diheteropogon sp.		
Spermacoce natalensis		Least Concern
Agathisanthemum sp.		
Anthospermum sp.		
Cynoglossum sp.		
Aristea woodii		
Gladiolus crassifolius		Least Concern
Cassipourea gerrardii	Bastard Onionwood,Common Onionwood	
Hypoxis argentea		
Stachys sp.		
Aloe saundersiae		Critically Endangered

Aloe sp.		
Mariscus capensis		
Mariscus indecorus		
Mariscus sp.		
Bulbostylis boeckeleriana		Least Concern
Bulbostylis sp.		
Cyperus articulatus		Least Concern
Cyperus semitrifidus		Least Concern
Cyperus sexangularis		Least Concern
Cyperus sp.		
Schoenoxiphium sparteum		Least Concern
Fimbristylis dichotoma		
Asclepias eminens		Least Concern
Pachycarpus appendiculatus		Least Concern
Solanum sp.		
Gnidia anthylloides		Least Concern
Gnidia splendens		Least Concern
Eugenia natalitia		Least Concern
Callilepis sp.		
Dicoma speciosa		
Felicia sp.		
Berkheya sp.		
Ursinia sp.		
Athrixia phylicoides		Least Concern
Conyza sp.		
Senecio scoparius		Least Concern
Sonchus sp.		
Helichrysum sp.		
Aspilia sp.		
Vernonia sp.		
Phymaspermum sp.		
Polygala hottentotta	Small Purple Broom	Least Concern
Polygala sp.		
Diospyros whyteana		Least Concern
Buxus macowanii		Least Concern
Crabbea sp.		
Dianthus zeyheri		Least Concern

Appendix H: Financial Plan for Ophathe Game Reserve

Purpose of the financial plan

The National Environmental Management: Protected Areas Act (No.57 of 2003) establishes the need for a costing plan to be prepared for the approval of a Protected Area Management Plan by the MEC or Minister.
Management Effectiveness of protected areas relates directly to the availability of financial resources to achieve biodiversity conservation objectives. It is recognised that most protected areas do not have adequate financial resources to achieve their vision and stated objectives.

The Financial plan has been developed in the context of the management plan in the interests of proper planning and sustained conservation management of the Ophathe Game Reserve.

Financial management of Ophathe Game Reserve

The financial objective for the Ophathe Game Reserve is to:

Provide adequate human resources, equipment, infrastructure and funding to enable the effective protection, development and management of the protected area.

Financial management of the Ophathe Game Reserve will be done in accordance to the Public Finance Management Act [No. 1 of 1999] and Ezemvelo KZN Wildlife policies.

Special projects:

Current funding is not sufficient to effectively maintain the Ophathe Game Reserve and the table below provides a cost estimate of the requirements for the implementation of the management plan. Certain management recommendations in the Management Plan which requires dedicated capital input separate from the normal operational requirement include:

- Replace and upgrade sections of the fence to secure the boundary of the protected area
- Upgrade roads
- Maintain buildings

Table 20: Ophathe Game Reserve - a cost estimate

Projected income	Year 1	Year 2	Year 3	Year 4	Year 5
Camping	3 000	3 500	4 000	4 500	5 000
Game sales	10 000	0	10 000	0	12 000
Accommodation	2 000	2 500	3 000	3 500	4 000
Other	0	0	0	0	0
Total Income	15 000	6 000	17 000	8 000	21 000
Projected operational budget	Year 1	Year 2	Year 3	Year 4	Year 5
Road maintenance	4 500	5 000	5 000	0	5 500
Fence maintenance	10 000	3 000	3 000	3 000	3 000
Building maintenance	12 000	15 000	20 000	20 000	20 000
Equipment maintenance	4 500	4 500	4 500	4 500	4 500
Alien and invasive plant control	10 000	10 000	10 000	10 000	10 000
Fire management	4 500	5 000	5 000	0	5 500
Erosion control and rehabilitation	10 000	3 000	3 000	3 000	3 000
Law enforcement	12 000	15 000	20 000	20 000	20 000
Services (gas, electricity, water)	4 500	4 500	4 500	4 500	4 500
Vehicle running cost and maintenance	10 000	10 000	10 000	10 000	10 000
Total operational budget	82 000	75 000	85 000	75 000	86 000
Projected capital requirement	Year 1	Year 2	Year 3	Year 4	Year 5
Roads	100 000	0	0	0	0
Fences	0	50 000	0	0	0
Buildings	0	0	70 000	0	0
Total capital expenses	100 000	50000	70000	0	0

Appendix I: Biodiversity Economy Nodes

SA Jagters en Wildbewaringsvereniging
SA Hunters and Game Conservation Association

Bewaring deur Volhoubare Benutting / Conservation through Sustainable Utilisation

Plot 3, Mountain Drive 7 / Plot 3, 7 Mountain Drive, Derdepoort Tel: (012) 808 9300
Posbus / PO Box 1952, Montana Park, 0159 Faks / Fax: (012) 808 9344
E-pos / Email: admin@sahunt.co.za Web: www.sahunt.co.za

Biodiversity Economy Nodes

Growing people through partnerships in responsible wildlife industries

1. INTRODUCTION

In developing countries like South Africa, many people are faced with poverty, unemployment and degraded environments. Furthermore, competition for land is increasing and the pressure on the remaining natural areas and biodiversity in general has never been as high as it is now. Biodiversity provides ecosystem services necessary for people's wellbeing and that act as the cornerstone for sustainable economic development. Whilst it is a constitutional right to have our biodiversity heritage protected, we also have to consider its responsible use and justifiable economic development and innovative strategies and models to reduce the need for complex trade-offs between economic, social and environmental objectives.

SAHGCA understands the important role of biodiversity conservation and the contribution of a responsible wildlife industry to the challenges of sustainable socio-economic development, especially in rural areas. As the biggest role player in the wildlife industry, with more than 39 000 members, SAHGCA is committed to developing innovative solutions for local challenges and partnered with Ezemvelo KZN Wildlife in the development of an innovative strategy to facilitate rapid socio-economic growth with sustainable jobs in dry-land ecosystem where very few other land uses are viable, whilst transforming the wildlife industry and securing important biodiversity and ecosystem services for rural communities. The strategy is based on the establishment of Biodiversity Economy Nodes (BEN's) that act as strategic vehicles to achieve economic, social and environmental objectives through an integrated landuse planning process that consists of core extensive wildlife areas around which eco-tourism, including hunting and associated support industries are developed through productive partnerships between government, private sector and communities.

2. BIODIVERSITY ECONOMY NODES

BEN's harness the development potential of our rich biodiversity and heritage assets in a responsible manner using the strengths of various partners to create vibrant Biodiversity Economy Nodes in rural dry-land ecosystem where very few other land uses may be viable. Protected areas form core conservation areas that are linked with natural or near

natural landscapes under management by private sector and communities (often successful land claimants) through innovative site specific partnerships, to establish extensive wildlife areas that can sustain a variety of productive wildlife and associated industries by creating economies of scale. These clusters of extensive wildlife areas can conserve variety in both the cultural and wildlife landscape, which forms the basis of a variety of cultural and wildlife based product offerings to consumers. With varying landownership and management models, these cluster of extensive wildlife areas create economies of scale for wildlife industries and associated entrepreneurial SMME development opportunities through the entire value chain of not only wildlife-based tourism (including hunting), but also other service industries such as transport. It creates opportunities for synergistic projects, service businesses, development and conservation that will create sustainable jobs, build capabilities and enhance the capacity of all sectors in addressing complex challenges in growing rural economies. The job opportunities that can be unlocked would require a variety of competencies and skills levels, that would further promote the development of educational and empowerment capacity. These areas where a variety of wildlife based and related products and services can be offered and where clusters of businesses create economies of scale, can also better compete locally and internationally. BEN's further allow government to strategically focus resources of national conservation and development initiatives, whilst at the same time address challenges associated with land reform and transformation of the wildlife sector and with that, facilitate rapid economic growth.

From a conservation perspective, the protected areas in BEN's act as catalyst in forming the partnerships with inter alia other land owners that enables the economy of scale to be capitalised on. These partnerships between landowners, through meaningful risk and benefit sharing, form the stability of the system. Within this model, conservation can start competing as a viable landuse and contribute to addressing socio economic development challenges. It address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society and reduce the direct pressures on biodiversity by creating an inclusive Biodiversity Economy with sustainable jobs, reducing poverty and inequality, whilst also protecting landscapes, productive ecosystems and their associated products and services to society. It further improves business models for extensive wildlife areas ensuring their continued contribution to delivery of critical ecosystem products and services. It is an innovative vehicle for delivering on the Millennium Development goals; National Development Plan goals; Aichi Targets; transformation of the Wildlife Industry; and almost all of the NBSAP Goals. Through strategic engagement with government, the concept of BEN's has now been included in the National Biodiversity Economy Strategy as well as the National Biodiversity Strategy, in which the Umfolozi BEN has been listed as a flagship project.

3. THE UMFOLOZI BIODIVERSITY ECONOMY NODE

The Umfolozi BEN consists of the Hluhluwe-iMfolozi Park and eMhakosini-Ophathe Heritage Park as the core conservation areas that are linked with private protected areas, stewardships sites, private game farms and communal land in a horseshoe around the southern reaches of Ulundi. Through productive partnerships between role players, the area has the potential to create a conservation area in excess of 150 000 hectares with a mosaic of sustainable land uses in this dry-land ecosystem where very few other viable land use options exist to grow the rural economy. Conservation, wildlife based tourism (photographic and hunting tourism) and Nguni cattle farming are the dominant landuses with huge potential for expansion, as the surrounding area is still predominantly natural or near natural landscapes eminently suited to the establishment and expansion of wildlife based industries. There are also several game reserves, stewardship sites and community reserves in the immediate area such as Ntinini, Emcakwini, Babanango to the West and Fundimvelo, the Royal Zulu Game Reserve and Thula Thula to the South, which can be linked to the core area. The town of Ulundi with its airport is located in the centre of the Umfolozi BEN.

The key livelihood and income streams strategies identified for the Umfolozi BEN are:

- Income and job opportunities from the tourism operations, lodges, concessions on the lands and hunting operations, as well as downstream ancillary businesses and enterpreneurial development opportunities.
- Job opportunities from reclamation of areas to be incorporated into parks and establishment of game farms and grazing areas. This reclamation will include clearing of alien invasives and ecological restoration in the area.

- Renovation and reactivation of water abstraction infrastructure, including boreholes, windmill pumps and dams. The single critical challenge facing agricultural production in the area is access to sufficient and on-hand water resources.
- Income, jobs and food security from from reactivating or development of new commercially viable communal gardens. Shops are a long distance from where communities live resulting in a viable local market for vegetable production. This market for fresh food would also be able to supply visitors to parks and game reserves and those working on the mining settlements in the area. Local schools are also viable markets for locally produced vegetables.

The BEN model provides a vehicle where these interventions and developments can be consolidated and where synergy can be created. As these developments flourish, the economic growth in the entire area will be stimulated and the Ulundi airport would be growing to accommodate more flights as a result of the growing tourism, hunting and business opportunities. The agricultural college in the area that are currently not fully functional, can become a centre for training and empowerment of communities, focussing on tourism, wildlife management and agricultural courses as this clustered developments will ensure the critical mass needed to ensure sustained operations and business opportunities.

SAHGCA, in partnership with Ezemvelo KZN Wildlife, is facilitating partnerships and interventions in support of conservation and responsible socio-economic growth in the Umfolozi BEN. The following are some of the positive outcomes from constructive partnerships between private sector, communities and government that are in progress in the node:

- Three communal areas (Big 5 initiative) have been declared as protected areas to be fenced into the southern reaches of the Hluhluwe-iMfolozi Park with the co-management agreement being finalised;
- Major private sector investments in access of R100 million have been secured on the above-mentioned communal land to develop wildlife-based tourism through the BIG 5 initiative;
- Rural communities on restituted land established productive and sustainable businesses in agriculture, forestry and wildlife with commercial farmers that resulted in substantial profits and community benefits;
- In principle approval by Ezemvelo KZN Wildlife for the development of an agreement where the Kwasanguye Community with their private sector partners and support from SAHGCA, may manage parts of the eMakhosini-Ophathe Heritage Park, including Ophathe Nature Reserve (a first for South Africa where a rural community will manage a government protected area);
- Communal areas contributing to the expansion of protected areas in Kwazulu-Natal, expansion of Black Rhino habitat, protection of a group of the critically endangered Wild Dogs and threatened plant species on their land;
- Memorandum of agreements between SAHGCA, communities, private sector and government where SAHGCA committed to:
  - continue promotion of the Umfolozi BEN and development of productive partnerships;
  - development of an inclusive and responsible hunting industry and associated support industries;
  - promotion and support of conservation initiatives;
  - development of a green certification system for responsible wildlife management and utilisation;
  - development of an auditing system to assess conservation performance in a multidimensional land use framework;
- Improved protection of threatened species and habitats by involving host communities through inclusive ownership models that go beyond that of stewardship sites and formal protected areas;
- Synergy and collaboration in funding and development applications and programs to empower rural communities to participate in the wildlife industry;
- Initiatives to improve agricultural productivity for communities in areas adjacent to the core extensive wildlife areas to improve food security; and
- Improved SMME opportunities with sustainable job opportunities that will assist in transformation of the wildlife industry and poverty reduction.

Table 1: Investments and job opportunities of core development initiatives in the initial development phase

PROJECT SITE	PRIVATE SECTOR INVESTMENT (ZAR)	DESCRIPTION OF INVESTMENT / LEVERAGING OF DEVELOPMENT POTENTIAL	JOBS /SMME OPPORTUNITIES CREATED
Thula Thula	R 20 m	Expansion of TTGR to include an additional 3000 – 6000 ha for conservation. Rhino rehabilitation centre established and local community employed in reserve and centre.	70 permanent jobs
Umfolozi Big 5	R 105 m	Zulu Tented Lodge; Biyela 5 Star Lodge; Mthemba 4 Star Lodge including Road Infrastructure; Water Reticulation for lodges from boreholes; Sewerage and Electrical Supply from Solar Panels	350 temporary jobs 237 permanent jobs
Opathe/Emakhosini /Kwasanguye	R 10 m with annual re-investment of R 2 m	Improving cattle, game farming and sugar farming operations and infrastructure.	100 temp jobs 60 permanent jobs

a. NATURAL RESOURCE MANAGEMENT PROGRAMS - DEA

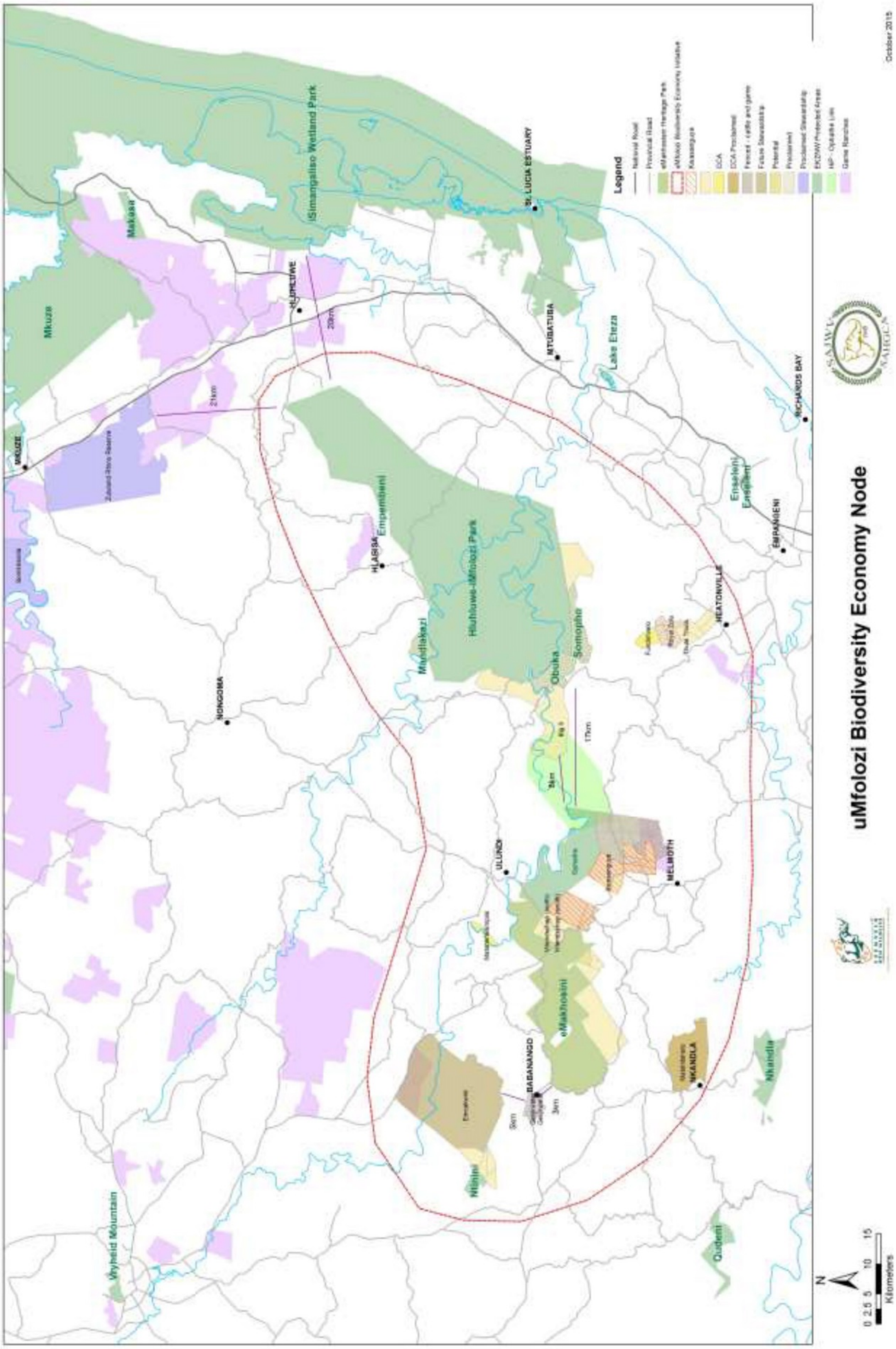
Through experience in working with communities, SAHGCA understands that initiatives like the Umfolozi BEN require significant social investment and it may take a couple of years before sustainable income streams will impact significantly on households within the UBEN. This is especially true for UBEN where the socio-economic development initiatives are primarily driven by private sector and communities, with little support from government to date, even for communities that obtained land through the land restitution process. A significant number of households in this rural area are headed by females, who are usually more disadvantaged in terms of resources and education. The unemployment rate is 49.4% with limited opportunities for other viable socio-economic activities.

It is believed that the National Resource Management Program of Department of Environmental Affairs can play a major role during the initial development phase of this BEN to create incentives for communities that made land available for conservation and growing the Biodiversity Economy, whilst addressing challenges of water security, threats to biological diversity, the ecological functioning of natural systems, exacerbation of wild fires, flooding, soil erosion, siltation, and challenges that would impact on the envisaged tourism development initiatives for the area. For this reason, SAHGCA as facilitator of the development of the Umfolozi BEN, submitted a proposal on behalf of communities for alien invasive clearing in the UBEN. The reclamation of areas to be incorporated into parks, to be established as game farms and improved grazing lands are critical in the initial phases of development. It does not only prepare the area for development, but also demonstrates to communities that their commitment to making land available for inclusion in the BEN, delivers benefits while hunting and tourism operations are being developed.

The following community anchor projects within UBEN have been identified for support through the NRM program:

- Project 1: KwaSanguye - Ophathe Project: The successful partnership between the Kwasanguye Community and Vriendschap Boerdery in sugar cane, forestry, cattle and game-farming resulted in them approaching Ezemvelo KZN Wildlife to drop fences between their game farming operations and Ophathe Nature Reserve. In principle approval has been granted by Ezemvelo KZN Wildlife for the development of an agreement where the Kwasanguye Co-operative with their private sector partners may manage parts of the eMakhosini-Ophathe Heritage Park, including Ophathe Nature Reserve. It is expected that through this agreement, the METT performance for Ophathe Nature Reserve will improve substantially as it has been shown that private sector are more effective in managing financial resources to achieve management objectives. This agreement will further expand Ophathe Nature Reserve with more than 3000 ha.

APPENDIX I


uMfolozi Biodiversity Economy Node
Legend
October 2015
iSimangaliso Wetland Park
Hluhluwe-iMfolozi Park
Mkuze
Makasa
ST. LUCIA ESTUARY
Lake Eteza
MTUBATUBA
RICHARDS BAY
EMPANGENI
HEATONVILLE
MELMOTH
ULUNDI
NONGOMA
HLABISA
Empembeni
Mandlakazi
Obuka
Somopho
eMakhosini
BABANANGO
NKANDLA
Nkandla
Ntinini
Vryheid Mountain
Qudeni
MKUZE
Kilometers
N

- Project 2: Hluhluwe iMfolozi (HiP) BIG 5 Project: Three communities adjacent to HiP have established a joint venture called the iMfolozi Big Five Trust to connect portions of tribal land to HiP to develop wildlife industries while contributing to conservation. To this end, three portions of their land were identified and proclaimed by Government gazette on 12 June 2014 as protected areas. These areas will now be incorporated into HiP by Ezemvelo KZN Wildlife and fences between the Community Reserves and HiP will be dropped and the perimeter borders included in the Park. Effectively, this arrangement sees the expansion of HiP by 6000ha.

- Project 3: The Thula Thula Project: currently the Thula Thula private game reserve (TTGR) consists of a total of 4 280 hectares, including the recent expansion to include the community-owned Fundimvelo Reserve (1080 ha) and Lavoni (1500 ha). The goal is to further expand the size of the TTGR towards the HiP through what is called the Royal Zulu Reserve (a further potential 9000 ha), additional community-owned land, which would then make an ideal conservation unit, with opportunities within the context of a BEN. The potential to enlarge is significant and opportunities exist to create corridors through community conservation areas to other parks such as HiP. Currently initiatives have engaged surrounding district municipalities and local chiefs to approve the incorporation of such corridors into their land use plans and the formation of community conservation areas. The owner has managed to enlist the support of some of the surrounding Amakhosi and plans are well underway to complete the link. There is a recent commitment of 3 500 ha, planned to be incorporated in the next 18 months.

As all these projects are community projects in rural underdeveloped areas, very little work has been done to date on description and classification of the resource base. Preliminary assessments driving through the areas have however revealed that there are significant interventions required to improve the integrity of the resource base, especially given that parts thereof will be included in formal protected areas. Because of costs implications to communities, these areas have however not been quantified through detailed surveys calculating densities per species per hectare. Would this proposal be successful, capacity within these communities to manage these projects are also limited. For this reason, the private sector partners would oversee the projects, and provide in-kind support through office and administrative infrastructure, but will in the process, through mentorship, develop the capacity of community members to manage these and similar projects as small contractors in future. In terms of functional capacity to implement the project, both SAHGCA as lead implementer as well as the partners have office infrastructure, telephones, vehicles; as well as the skills, expertise and experience to implement the project as scoped.

This will give effect to the objectives of the Biodiversity Economy Node to develop wildlife-based industries and business opportunities within poor rural communities. The intention is to use this NRM application for alien invasive plant clearing as an opportunity to develop SMME's that can continue beyond the life of the project because the BEN creates economies of scale that would ensure that the jobs created through this are sustainable, and community members will move from being casual labor, to becoming contractors that can provide a service throughout the BEN. The projects funded through the NRM Program are therefore seen as part of the business incubator process for the BEN. Although the initial focus is on alien plant clearing, this can be expanded to working for fire and other similar programs.

SAHGCA firmly believes in the synergy generated through partnerships and has signed partnership agreements with various organizations to further its conservation objectives. These partners will also contribute in the delivery of outcomes of this initiative. SAHGCA and its partners, have in-depth knowledge and experience in conservation, land management, administration, community and economic development that is required to make this initiative a success. We believe that given this depth of understanding of the South African conservation and socio-economic landscape, SAHGCA and its partners can harness the benefits of the Natural Resource Management Program of DEA to not only improve the integrity of the resource base that will contribute to well-functioning ecosystems and improved provision of basic ecosystem services and livelihoods such as food, forage, fuel, building materials and water. But through expert input and leadership, also produce more tangible economic benefits in-line with the national development targets in dryland ecosystems in Kwazulu-Natal where people are greatly affected by environmental vulnerability and poverty.

The specific projects identified for intervention in this proposal, have been selected as they are key anchor projects in unlocking the economic potential of the Biodiversity Economy around Ulundi, but also because of the positive impact they could have in changing the well-being of vulnerable households. Many of who are unemployed and are greatly reliant on the resource base for livelihoods. The area further falls within the highest priority areas for clearing of alien plant infestations, yet it is also an area that can significantly contribute to provincial and national conservation targets as it falls within the protected area expansion priority areas of Ezemvelo KZN Wildlife. Clearing of alien invasive in these areas will further contribute in reducing the negative impacts of veld and forest fires on human livelihoods, biodiversity, ecological processes and ecosystem services in already vulnerable communities, whilst also contributing to improved water quality in the area and more specific, the Umfolozi River that runs through the project area.

A tender of 57 M has been submitted by SAHGCA on behalf of these communities to provide jobs during the initial phases of the development of the Biodiversity Economy, whilst also improving the integrity of base for future tourism and wildlife-based investments.

b. HUNTING AS CATALYST TO GROW THE ECONOMY AND BENEFIT CONSERVATION

There is sufficient scientific proof that it is beneficial to conservation if both public and private sector benefit from wildlife, including through responsible hunting. We must however ensure that the provisioning of wildlife values to landowners increase their conservation stewardship of their properties. As such it is critical that wildlife, game farming and hunting should be managed in a manner that promotes social, economic and environmental responsibility. SAHGCA is committed to assist landowners and communities within the UBEN to develop responsible wildlife industries, with an emphasis on the hunting industry.

Functional ecosystems are critical for human well-being and sustainable economic growth as demonstrated in the Millennium Ecosystem Assessment. The pressure on natural areas and well-functioning ecosystems is increasing for provision of not only basic ecosystem services and livelihoods such as food, forage, fuel, building materials and water, but also to produce more tangible economic benefits. The contribution of South Africa's biodiversity in terms of ecological goods and services, such as clean air, water, food and materials, is valued at R73 billion. It is equivalent to about 3% of the national Gross Domestic Product (GDP). It is the believe of SAHGCA that the Wildlife Industry and responsible hunting in particular, can achieve triple bottom line profits, especially in dryland ecosystems where people are greatly affected by environmental vulnerability and poverty.

Hunters have over the years, played a major role in conservation of biodiversity worldwide and conserve millions of acres of wildlife habitats to ensure the sustainability of hunting stocks and to preserve the beauty of our natural heritage. A peer reviewed study collected information on trophy hunting in 23 countries in Africa. The largest industries occurring in southern Africa and Tanzania, where it is expanding. The hunting industry has however remained static or is shrinking in Central and West Africa. A minimum of 1,394,000 km^2 is used for trophy hunting in sub-Saharan Africa, which exceeds the area encompassed by national parks. Hunting is thus of major importance to conservation in Africa by creating economic incentives for conservation over vast areas, including areas which may be unsuitable for alternative wildlife-based land uses, especially in dryland ecosystems. In dryland ecosystems, the financial reward for wildlife management is approximately three to four times higher than for domestic stock (R220/ha vs R80/ha for stock farming). Three times more staff is also employed and trophy hunting in particular generates foreign income, critical for the trade deficit.

In South Africa, 17% of the country consists of extensive wildlife areas under management of private sector, and it plays a huge role in providing ecological goods and services. It is approximately three times more than the area under formal protection by government, confirming the important contribution private sector and the Wildlife Industry makes to conservation. These game farms have approximately 18.5 million head of game, four times the number in state protected areas. The value of wildlife and hunting as an activity, therefore, goes far beyond being the biggest percentage generator of the income for the sector. It stands to reason that the private sector should have the

necessary incentives to encourage them to continue protecting their contribution to the Country's natural capital and economy.

Nationally, the wildlife economy generated R9.1 billion for the economy in 2013. International trophy hunters spent R1.1 billion to undertake 7 638 hunts in the same period. Of the 70% (R7.4 billion) generated by hunting alone, the estimated 200 000 local hunters made the biggest contribution of R6.3 billion. On average, a local hunter spent R31 000 per hunting season, of which 50% is spent on game and the rest on 'additional' expenses. The most popular provinces to hunt in are Limpopo (50%), the Northern Cape (48%) and the Eastern Cape (38%). Although the gross regional domestic product (GDP) per capita in these three provinces are some of the lowest in the country, hunting provides opportunities throughout the entire value chain for communities to generate income. The ABSA's Agricultural Outlook Report indicate that the world demand for venison is 100 000 tons, with current supply only at 40 000 tons and a projected growth potential of as high as 20% for local markets and 8% in the export market between 2013 and 2020. Game biltong alone currently generates approximately R237 million a year.

The appeal of game meat as an alternative protein source lies in the fact that it is seen to be healthy and organic, while also contributing to sustainability of extensive wildlife systems in some of the poorest and agriculturally marginal land in South Africa. It is further complimentary to hunting and eco-tourism and has the ability to generate ancillary industries such as abattoirs and tanneries. A study published in 2013, further showed that hunting can contribute to food security in poor rural communities where edible by-products from hunting are sold. The results revealed that edible by-products to poor consumers appears to be culturally acceptable, affordable, accessible and safe. Although very few studies have been undertaken in this arena, it is prevalent that the extension of the sales of venison to the informal sector would increase traceability and safety of the venison product and concomitantly minimize the risk of poaching. It is suggested in the study that methods should be developed which make the distribution of edible by-products to vulnerable rural communities feasible.

Together with our partner SAHGCA is developing business models for various hunting related income streams that will be used to guide development of viable business opportunities within the UBEN. Attention is given to opportunities throughout the value chain of hunting such as hunting operations, meat processing plants, tanneries, taxidermy and other ancillary businesses.

c. UBEN AGRICULTURAL SUPPORT PROGRAMME

Interventions that provide positive opportunities to contribute to South Africa's food security, especially for the rural poor, must receive attention given the challenges facing this country in relation to protecting food security. Much has been discussed about how to reconcile land reform with agricultural production. Since 1994 significant amounts of land have been transferred to black communities but one of the criticisms of this process has been the fact that support for new black landowners has not kept apace with the transfer of ownership. Current debates are happening involving stakeholders at all layers of government and with the agricultural sector to address these issues. The Department of Rural Development and Land Reform is working closely with the Department of Agriculture, Forestry and Fisheries to look at ways of ensuring that South Africa does not face a food supply crisis in the future because there are not enough commercial agricultural producers. One of the solutions is to forge mutually beneficial relationships between agricultural and rural development stakeholders. Another solution is the active promotion of small-scale but multiple homestead agriculture. The UBEN Agricultural Support Programme seeks to address both of these approaches to rural development and sustainable agricultural production.

The geophysical context of the Umfolozi Agricultural Support Programme is a further factor in understanding why this initiative has credibility. This part of KwaZulu-Natal is remote, underdeveloped and there is lack of infrastructure, poor access to markets as well as a lack of consistent institutional support. These factors have rendered these communities vulnerable economically. Many of them are also hugely dependent on the natural resource base for livelihoods and therefor extremely vulnerable to climatic conditions such as droughts. The lack of water infrastructure has hurt

pastoralists and growers fundamentally. Livestock herds have diminished, and previously productive agricultural lands are lying fallow.

This program seeks to address some of these issues by revitalizing water management systems, re-establishing communal gardens and improving livestock herds. Combining this initiative with the other wildlife based interventions within the UBEN addresses the issue of sustainability. This proposal is seen as a way to kickstart small scale agricultural production. An initial agricultural, infrastructural and hydrological assessment of some of the sites has revealed a typical picture of underdevelopment, poverty and deprivation, and the logic for ecotourism development and agricultural development is absolutely necessary for the future of these communities. The area is particularly desperate due to its remote location and that it has been hard hit by drought in the past decade, especially the past three seasons.

Appendix J: Ophathe Game Reserve Fire Management Plan

ECOLOGICAL ADVICE ZULULAND

DEVELOPMENT FIRE MANAGEMENT PLAN FOR OPHATE GAME RESERVE

Authors: Chris Barichievy (District Ecologist-Zululand) & Amos Thembe (Conservation Manager- EOHP)

Context:
There is as yet no Integrated Management Plan for Emakhosini Ophate Heritage Park (EOHP). There will in all likelihood be a plan in the short- medium term; however this does not preclude the need for active fire management at present. This management plan is a temporary solution- providing short term guidance to management and outlining actions to allow for the development of a more ecologically integrated fire management plan. This fire management plan must be seen as a starting point from which further objectives can be added and adapted to as knowledge becomes available and resources to management become more reliable.

Currently for the three sections of EOHP (Figure 1); only the Ophate Section has adequate staff and resources to enforce some semblance of control over fires. The Schoonstroom and Emakhosini sections are effectively burned annually by arsonists to provide grazing for illegal cattle in the area. These areas are considered uncontrollable, and until such time as Ezemvelo- AMAFA responsibilities have been clarified the area is considered unmanaged. This management plan refers only to the Ophate Section.

Objectives for management have not been identified for Ophate bar generic management for biodiversity conservation. However, protection of the five White Rhino that still reside within the protected area and the two that are to be reintroduced in 2014 have become a priority. EOHP has experienced some of the highest levels of poaching within Ezemvelo and lost 87% percent of all rhinos since 2008. The fire management plan must make positive additions to both biological and security of the Rhino.

Ophate section receives between 680-850mm of rainfall per year and is predominantly Zululand Lowveld vegetation type, with a smaller component of Hinterland grassland on the crests of the hills. Fire is a major driver in savanna systems, which in mesic systems such as this remains the major controller of the tree-grass ratio when combined with herbivores. EOHP is currently underutilized in terms of game production; the stocking density estimated in 2013 was calculated at approximately 30 percent of the estimated carrying capacity. This vegetation type is similar to that found throughout iMfolozi Nature reserve and can stock much higher densities of game. If low game densities continue and fire is excluded it can be expected that the reserve will become more wooded in time as it approaches climatic potential. Fire as a management tool can be used to counteract thickening and should be used to ensure maximum population growth of ungulate populations.

P O Box 13053, Cascades, 3202 ● 1 Peter Brown Drive Montrose, 3202 ● Tel : +27 33 239 1511 Fax : +27 33 239 1515
www.kznwildlife.com

Historically, fire management at Ophate was based on expert opinion; a system of pre- and post-fire inspections in which areas were identified to be burned based on biomass and year on year objectives. The long term goal is to tend toward a point where there is an adaptive management/ evidence based conservation approach to fire management at Ophate Game Reserve. This is however not logistically feasible at present; therefore a 2-3 year rotational burn policy will be implemented. Although somewhat rigid this allows for targets to be set and implemented year on year, while allowing for some adaptation in the years to come. The approach allows for time to address strategic level issues within the Ezemvelo- AMAFA relationship while still ensuring basic fire management.

Figure 1: Map of Emakhosini Ophate Heritage Park. Management is only able to effectively manage fire in the Ophate section. The Emakhosini (Cronje) section and the Schoonstroom sections are effectively burnt annually by arsonists.

Temporary fire management plan for Ophate Section
The following is a brief plan outlined for the next 5 years, although every effort should be made to ensure that a more evidence based approach is integrated into the management process as soon as possible.

Ophate Fire objectives:
Discussions between Eco advice and management units generated the following generic fire objectives. These are not completely exhaustive but provide the starting point from which to work.

1. To maximize spatio-temporal heterogeneity to ensure biodiversity conservation and maintain savanna processes.
2. To provide a green flush early in the season to reduce chances of the rhinos sitting on the fences/ fire breaks to increase security.
3. Provide grazing for mammals within the closed environment to allow for maximum population growth.
4. To minimize the potential for uncontrolled fires in the entire reserve by generating a template of variable time since last burn.

P O Box 13053, Cascades, 3202 ● 1 Peter Brown Drive Montrose, 3202 ● Tel : +27 33 239 1511 Fax : +27 33 239 1515
www.kznwildlife.com

Fire Breaks
Ophate is part of the FPA, and fire breaks are to be burned yearly and it must be ensured that FPA fees are paid.

Types of fires to be managed:
Fire blocks were designed by Eco-advice and management concurrently to be logistically feasible, utilizing roads, rivers and hill crests as boundaries. This fire management approach has been utilized in a number of reserves in Zululand and serves to dissect the landscape into manageable units. The entire block is not required to be burned, rather this allows for ease of identifications of an area to be burned, a fire is set through a number of point sources and left to burn out.

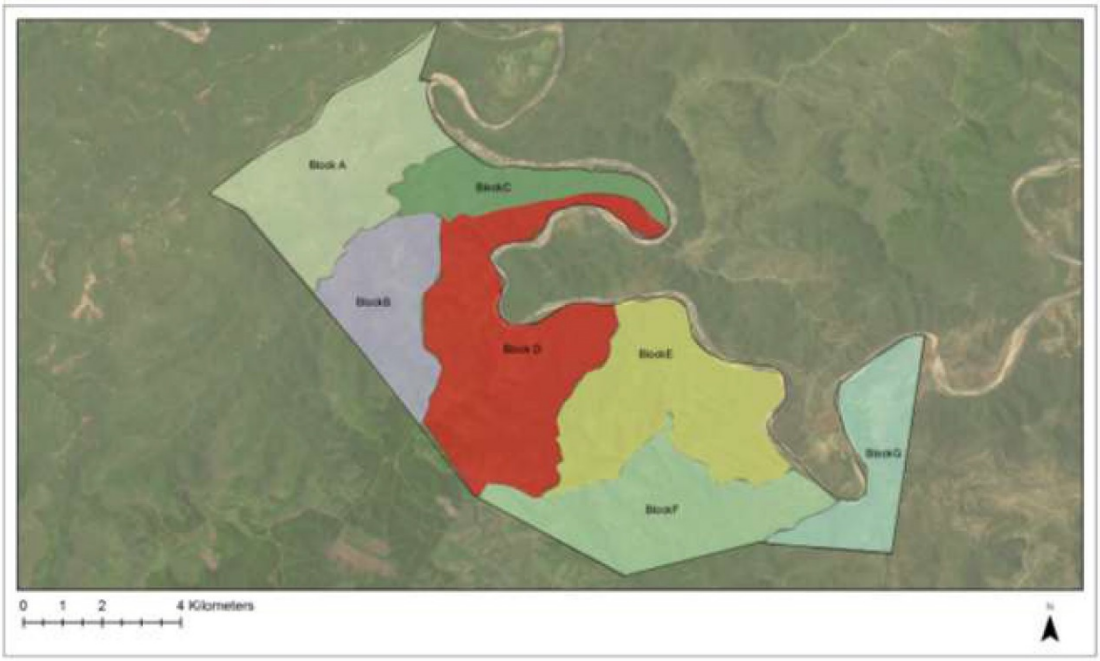


Figure 2: Fire management blocks at Ophate Game Reserve. These management blocks are temporary, to allow for regions to be burned in a 2-3 year burning cycle without the need for ecological input.

Block burn
Block burns primary objective is to remove moribund material and maximize spatio-temporal heterogeneity. Block burns are to be ignited using point source ignition after approximately 25mm of rain in the beginning of spring. Cool burns are recommended, conditions should be temperature <30C, wind <30km/h winds and <30% humidity. Preferably all fires to be put in such a way that they burn with the wind, uphill. Patchy burns are recommended, which is accomplished by simply leaving the fire to burn out naturally. The topography of Ophate is ideal for patchy burns.

Should further objectives such as reducing bush encroaching species become evident, the inclusion of hot fires will be debated.

Rhino Security Burns:
To be put in June/July at management discretion to generate a small green flush. Currently they are chosen due to the proximity to field ranger picket camps and situation for security reasons.

P O Box 13053, Cascades, 3202 ● 1 Peter Brown Drive Montrose, 3202 ● Tel : +27 33 239 1511 Fax : +27 33 239 1515
www.kznwildlife.com

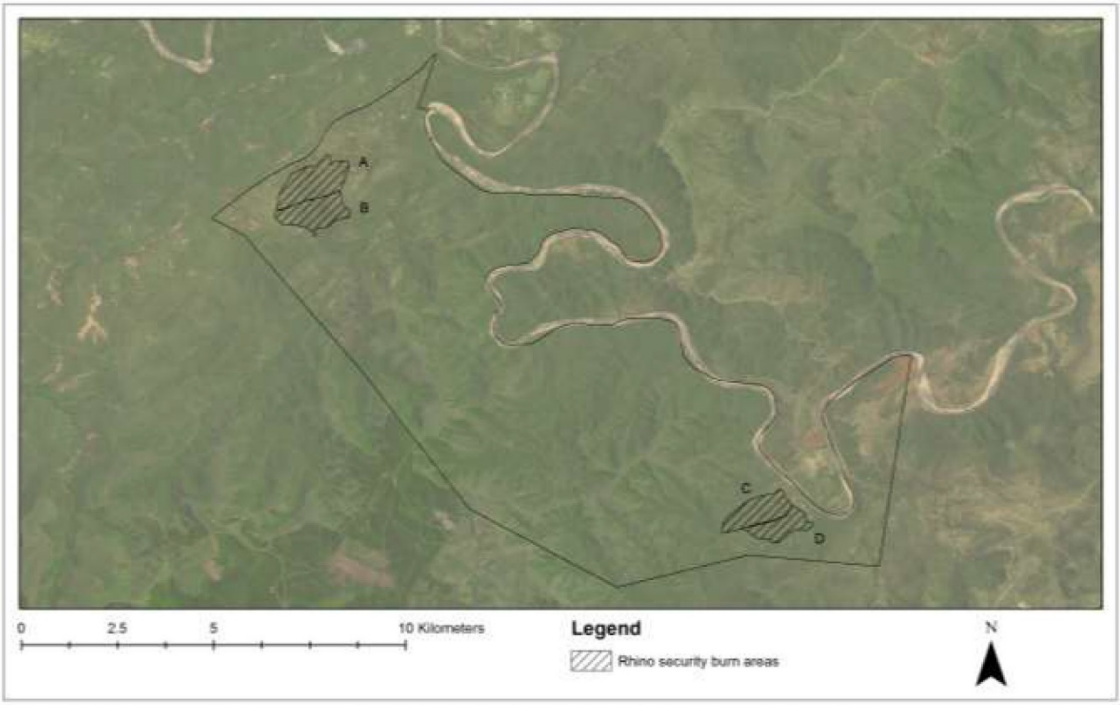


Figure 3. Rhino security burn areas for Ophate Section that are to be burned alternatively every second year in groups of A & C, B & D.

Temporary Burning plan- Ophate Game Reserve:

Year	Late burns (after 25mmrain)- Block burns	Early Burns
2015	A+D+F	Rhino A+ Rhino C
2016	B+C+E+G	Rhino B+ Rhino D
2017	A+D	Rhino A+ Rhino C
2018	B+E+F+G	Rhino B+ Rhino D
2019	A+C+D	Rhino A+ Rhino C

Notes:

- If a block to be burned is ignited incidentally, through arson or through lightning in the same year as it is to be burned, it can be left to burn out.
- If a non-target block is ignited, then there should be a substitution to ensure that not more than 50% of the reserve is burned in that year. If the burn can be included and still have less than 50% of the reserve burn, then a substitution is not necessary.
- As soon as resources are available to do VCA monitoring and Biomass assessments, these must be done to inform the burning schedule.

P O Box 13053, Cascades, 3202 ● 1 Peter Brown Drive Montrose, 3202 ● Tel : +27 33 239 1511 Fax : +27 33 239 1515
www.kznwildlife.com

APPENDIX J

Recommended further short- medium term actions

1. Clarify the relationship between AMAFA and Ezemvelo, specifically with regard to the Emakhosini section of EOHP.
2. Control the illegal grazing in EOHP.
3. Define biodiversity management objectives for EOHP or failing 1& 2, Ophate section alone.
4. Determine areas of concern for bush encroachment/ Alien plant control that may require specific burns.

P O Box 13053, Cascades, 3202 ● 1 Peter Brown Drive Montrose, 3202 ● Tel : +27 33 239 1511 Fax : +27 33 239 1515
www.kznwildlife.com

Appendix K: Heritage Mapping and Survey of the Ophathe Game Reserve

HERITAGE MAPPING AND SURVEY OF THE OPHATHE GAME RESERVE
EMAKHOSINI OPHATHE HERITAGE PARK
KWAZULU-NATAL

Report Produced by

Len van Schalkwyk
eThembeni Cultural Heritage
Box 20057 Ashburton 3213
PIETERMARITZBURG South Africa
thembeni@iafrica.com

for

Amafa aKwaZulu-Natali
195 Jabu Ndlovu Street
PIETERMARITZBURG 3200

November 2016

HERITAGE MAPPING AND SURVEY OF THE OPHATHE GAME RESERVE
EMAKHOSINI OPHATHE HERITAGE PARK

SCOPE OF WORK

The defined Scope of Work for this commission was: "The survey, and conducting of condition assessments, of heritage resources, with special reference to the archaeology within the defined area of the Opathe Game Reserve, Emakhosini- Ophathe Heritage Park"; and submission of the report on SAHRIS.

Figure 1. The steep and rugged topography of the Ophathe Reserve (Western boundary on the Mfolosi River).

INTRODUCTION

eThembeni Cultural Heritage was commissioned by Amafa aKwaZulu-Natali to undertake an heritage survey and reconnaissance of the Ophathe Game Reserve in the winter of 2016. The objective of the survey was to ascertain the presence/absence of heritage resources; including archaeological residues and sites, for management purposes and the potential for further research. The Ophathe Game Reserve forms a sizeable part of the eMakhosini Ophathe Heritage Park that straddles the middle basin of the White Mfolosi River, within the Valley of the Kings near Ulundi. The Park is steeped in the formative history of the Zulu nation and is a major tourism destination. Consequently, the survey also sought to identify heritage sites that could enhance the interpretation of a larger suite of environmental and cultural history in the Valley.[1]

[1] See Appendix 2: summary and further readings on the cultural historic sequence of the wider region

Field work was undertaken in two field trips of 13-15 March and 17-19 May 2016. Early, Middle and Later Stone Age artefacts were observed as random occurrences. Evidence of Late Iron Age settlement was observed at two locations and three historical period cattle posts were recorded. No Early Iron Age residues were observed. Reference is also made to historical sites immediately adjacent to the proclaimed boundaries of the Park.

Due to security and nature conservation staff constraints the eastern boundary of the Park, comprising portions of the farm Stockville 13904, was not surveyed. This is unfortunate as satellite imagery indicates deep colluvial soils on the slip-off slopes adjacent to the Mfolosi River that have a high potential to yield Early Iron Age archaeological residues, albeit that these slopes have previously been mechanically cultivated.

SURVEY AREA DESCRIPTION

The Ophathe Game Reserve is some 8 825 ha in extent and comprises a steep and rugged topography with deeply incised valleys draining into the Mfolosi basin to the North and East (Figure 1). The Reserve, proclaimed by the KwaZulu Government in 1991(see Appendix1), comprises the consolidation of a number of farms now collectively known as the eMakhosini Ophathe Heritage Park.

The Reserve is named for the Ophathe River which rises on the Mthonjaneni plateau at c.1020 m amsl and drains a steeply grading basin into the Mfolosi River at c. 420 m amsl. *Ophathe* in turn is derived from an isiZulu idiom, *ungiholela ophathe*, meaning to entice someone into a situation of mortal danger. The naming of the river is apocryphally linked to circumstances around the ambush of Voortrekkers who rode in Andries Pretorious' "Wenkommando" of 1838, to destroy Umgungungdlovu and retrieve cattle stolen at the Battle of Blaaukrantz (for detailed account see Chadwick [1986], Appendix 2). Other informants, however, believe that the name has greater antiquity; and is claimed to be associated with a skirmish involving Nwandwe cattle raiders who were lured and ambushed at the headwaters of the drainage basin during the battle of Gqokli Hill (Oscar Mtimkulu[2]. pers.comm. 2016).

The Ophathe Reserve extends, in the south-west, from the Mthonjaneni Heights at c.1040 m amsl, to its north eastern boundary along the White Mfolosi River at c.400 m amsl .This altitudinal difference spans both a grassland and savanna biome[3]. Vegetation grades from Midlands Mistbelt Grasslands, with Subtropical Freshwater Wetlands that manifest in the form of tarns, on the higher elevations, grading altitudinaly through Dry Hinterland Grassland to dry Zululand Lowveld woodland and thicket in the valley bottoms (*sensu* Mucina and Rutherford)[4]. Mean Annual Rainfall figures vary between 600 - 650 mm in the valley bottoms and 850 - 900 mm at the higher altitudes.

[2] Oscar Mthimkulu was born and raised in the eMakhosini Valley and is currently Conservator: Okahlamba–Drakensberg WHS
[3] Low and Ribelo.1996
[4] Mucina and Rutheford. 2006

Figure 2. Incised drainage lines and the steep and rugged topography of the Ophathe Reserve.

These incised valleys expose a geological sequence spanning some 3500 million years. The oldest rocks are basal granites of the Kaapvaal Craton exposed within palaeo-river channels of the Mfolosi basin. Ascending to the heights above at Mthonjaneni the geology grades through granites and gneisses of the Natal Metamorphic Province (1800 mya), Natal Group Sandstones (500 mya), and Dwyka tillite and Ecca sandstones and shales of the Karoo Supergroup (250 mya). The consequence, in the middle and lower reaches of these valleys, are significantly mixed heterogeneous talus and screed slopes comprising elements and derivatives of all the overlying lithostratigraphy[5].

This significant suite of geological exposures is certainly worthy of further interpretation and publicity as part of an enhanced visitor experience to the eMakhosini Ophathe Heritage Park; and bodes well for the establishment of a GeoTrail in the area.[6]

[5] Uken, R et al. 2014
[6] www.35igc.org/Uploads/Images/Content/Pongola%20Field%20trip%20GB%20Dec%202015.pdf

FIGURE 3. Ophathe Game Reserve_ Cadastral Boundaries

METHODOLOGY

Early, Middle and Later Stone Age artefact scatters were known to occur in and adjacent to drainage lines and *dongas* that erode both headward and laterally through the colluvial and screed deposits derived from erosion of the upslope lithology (personal observations). In the lower reaches of these drainage lines, reducing gradients and resistant underlying Ecca shales and sandstones result in the deposition of deep sand deposits forming palaeosols. These, themselves, are subject to downward and headward erosion during episodes of above average rainfall and episodic colluvial infill from sheet wash from the surrounding slopes; a process known as *pedogenisis*.[7]

The upper A-horizon palaeosol deposits have been C^{14} dated in the region to coincide with the Late Pleistocene Hypothermal between c.35 000 and 14 500 BP [8,9] and span the terminal Middle Stone Age and early Later Stone Age. Consequently, *dongas* and drainage lines were targeted for evidence of Stone Age residues and possible *in situ* knapping floors. B-horizon palaeosols, beyond the range of C^{14}, feasibly span the periods of earlier MSA technologies including Still Bay (c.70 kyr), Howieson's Poort (c.65 kyr) and late MSA (c. 55-60 kyr) technologies[10]; this however awaits future secure dating and research confirmation[11].

[7] Clarke, A. et al. 2003
[8] Botha, GA.et al. 1990
[9] Botha,GA. et al.1992
[10] Wadley,L. 2015
[11] Botha, GA. et al. 1994

Informed by previous survey experiences by the author (see below), in both the eMakhosini and Mahlabathini basins, searches were further directed to level areas on the lower slopes of interfluves and in areas adjacent to drainage lines. It is here that deeper colluvial soils suitable for cultivation and perennial sources of water occur, that were prerequisites for Iron Age settlement. Slopes of > 30% gradient were observably eschewed for settlement in pre-colonial times (see Figure 2).

OBSERVATIONS

In the mid to late 1980's, prior to the construction of the R66 access road to Ulundi, the author was privileged to explore the farms Overvloed and Witvoloos on horseback and on foot with the late Nick Steele[12]. We traversed largely along the course and secondary tributaries of the Mthibelundi drainage basin which allowed for easier access through the thick Zululand woodland. On an excursion to visit Gqokli Hill[13] and to try to re-imagine the course of that battle we commented on the lack of evidence of Iron Age occupation in the Mthibelundi basin. Nick ascribed this to the lack of perennial water, having observed that there certainly was evidence of Iron Age settlement in the Mkhubane drainage to the northwest of the D301 and closer to the Mfolosi River; and to the east of Gqokli along the Thengela Ridge, above the course of the Ophathe River. Both the Mkhubane and the Ophathe were observed to retain perennial residues of surface and sub-surface water even during the current 2016 drought.

In 1985/86, Dr. Tim Maggs and the author investigated a reported Late Iron Age iron smithing site located on the farm Overvloed, adjacent to the Park on the southern bank of the White Mfolosi River. The site had been exposed by a combination of the colluvial overburden covering the site being removed by the high water levels of the Mfolosi during Cyclone Demonia (1984); and subsequently by the grading of an access road to the extant Afrimat hard rock quarry. The site had been graded and driven over by heavy machinery and only residual furnace and *tuyere* fragments and iron ore and slag were collected (KZN Museum Site Record).

Coincidently, a few years later, the Ondini Cultural Museum was curating an exhibition at King Mpande kaSenzangakhona's Memorial site at Nodwengu; of copies of paintings of the artist and traveller, George French Angas.[14] One of the Angas' paintings, annotated as "Zulu blacksmiths at work on the banks of the Mfolosi River", drew our attention (see Figure 4). Angas had a reputation as a very observant naturalist and gifted draftsman, and his landscape depictions are regarded as being highly accurate.

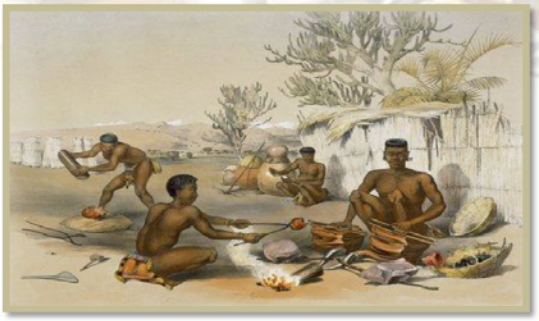


Figure 4 Zulu blacksmiths at work on the banks of the Mfolosi River (during the reign of Nkosi Panda c.1842)

[12] http://www.natalia.org.za/Files/27/Natalia%20v27%20obituaries%20Steele.pdf
[13] http://obscurebattles.blogspot.co.za/2015/02/gqokli-hill-1818.html
[14] http://adb.anu.edu.au/biography/angas-george-french-1708

The archaeological site is located close to two of the historically recorded drifts over the Mfolosi, along access routes to King Mapande's *iKhanda* at Nodwengu. Angas was at the time *en route* to visit the King. We ourselves, being familiar with the landscape, conjectured on the possibility of the archaeological site being the one Angas had observed and painted. With a large format facsimile copy of the painting in hand we revisited the site. Certainly, one can recognise the location of the Mabhedlane, Endlovane and Mkhazane hills on the skyline, as depicted in the painting.

Whilst the exercise remains one of conjecture we were however mindful during this survey to the possibility of the occurrence of further smelting and smithing site residues being present on the Ophathe Reserve.

Sites and residues observed (See also Table in Appendix 3)

All **Stone Age** residues observed on Opathe were random water worn occurrences that have been moved down slope by colluvial wash. No *in situ* knapping floors were discernible. It is possible that the eroding donga into the palaeosol on the western boundary, that extends into the adjacent farm, Dorstfontein, may well contain *in situ* MSA knapping floors. The upper reaches of the palaeosol was however inaccessible due to the game fence.

Site and Period	Lat	Long	Description and Comments
OP ESA1	S28.39388°	S28.39388°	ESA flaked core; random hill-washed occurrence
OP MSA DONGA1	S28.39221°	E31.35572°	Eroding Palaeosol; western boundary. Water worn MSA flakes (indet.age). Quartzite and hornfels (IS)
OPT LSA1	S28.37777°	E31.36943°	Random water washed LSA quartz debitage

Figure 5 ESA flaked core; random colluvially washed occurrence (OP ESA1)

Figure 6 Eroding palaeosol with scattered quartzite and hornfels (indurated shale) MSA *debitage* amongst other colluvially washed lithic debris (OP ESA Donga1)

No **Early Iron Age** (EIA) remains were observed within Opathe. Msuluzi period ceramics have been previously observed outside the reserve boundaries in ploughed fields located on colluvial slip-off slopes adjacent to the Mfolozi River; both adjacent to the Park and further downstream (L.van Schalkwyk, personal observations).

Figure 7 Ploughed fields on colluvial slopes of the Mfolozi River where Msuluzi ceramics have previously been observed

Future survey of the portion of the reserve comprising the farm Stockville 13904 may well yield EIA residues in the very similar colluvial slopes along that portion of the Mfolozi River and its attendant tributaries. Google imagery shows that these slopes have also been extensively ploughed in the recent historical past (20th C).

Late Iron / Historical period settlements were observed at two localities. The first, a contiguous scatter of residues runs down slope from SW to NE parallel to the western face of the Thengela Ridge (Figure 8). These comprised weathered pot sherds; broken upper and lower grindstones; heat spalled cooking fire-stones; and the very ephemeral remains of a hut floor (Figures 10, 11 and 12).

This part of the reserve is the most conducive to settlement, given the attributes of deep colluvial sandy soils, a relatively gentle slope and the close proximity of perennial water from the Opathe River. However, the age of the observed residues is difficult to gauge. Pottery fragments are temporally adiagnostic, as are the grindstone fragments. Suffice to say that they were deep-dished and synonymous with the grinding of maize. The ephemeral hut floor remains have been exposed to down slope erosion and trampling by both cattle and game.

The larger part of the settlement area has been previously bushed cleared to create a holding boma and loading ramp for wildlife relocations. More recently it has been used as a vulture restaurant. Game animals currently aggregate in the cleared area to graze the pioneer *Cynodon and Urochloa spp* grass lawn, and roll in the ash and dung residues of a previous cattle byre. The combination of down slope erosion, bush clearing and animal trampling have laterally displaced the material cultural debris over an area of c.1 km^2.

Whilst the area fits historical descriptions of settlement in the late 19th C (see Chadwick, Appendix 2) there is no doubt that this *locale* was inhabited in the early to middle 20th C by labour tenants when the farm Witvoloos was run as a cattle farm. Both the 1975 and 1980 editions of the 1:50 000 topographical map of the area (2831AD Ulundi) show "Native Huts" located below the Thengela Ridge.

It is most probable that the *locale* has been inhabited for at least the last 150 years and the residual material culture is a scattered testimony of multiple occupations.

A single stone enclosed grave (OPT GRV1).was observed on the granite crest of the Thengela Ridge (Figure 13). The uniform height of secondary woodland in a c. 50m radius around the grave site suggests that the area may have been the location of a homestead. However, no other material cultural residues were observed and the grave may in fact be related to the previously described settlements further down slope to the west.

Site and Period	Lat	Long	Description and Comments
OPT LIA01	S28.38684°	E31.36555°	Series of contiguous material residues occurring
OPT LIA1	S28.39136°	E31.36413°	along the ridgeline over a distance of 900m.
OPT LIA2	S28.39075°	E31.36394°	Weathered clay sherds <10/10^{2}m; broken U&L grind stones; ephemeral hut floor remains and heat spalled stones. Area denuded.
OPT GRV1	S28.38485°	E31.37479°	Stone enclosed grave on granite ridge above OPT LIA01.
OPT LIA3	S28.38699°	E31.44614°	Possibly historical? Random heat-spalled stones and U&L grindstone residues. Vegetation cleared and re-growth uniform.

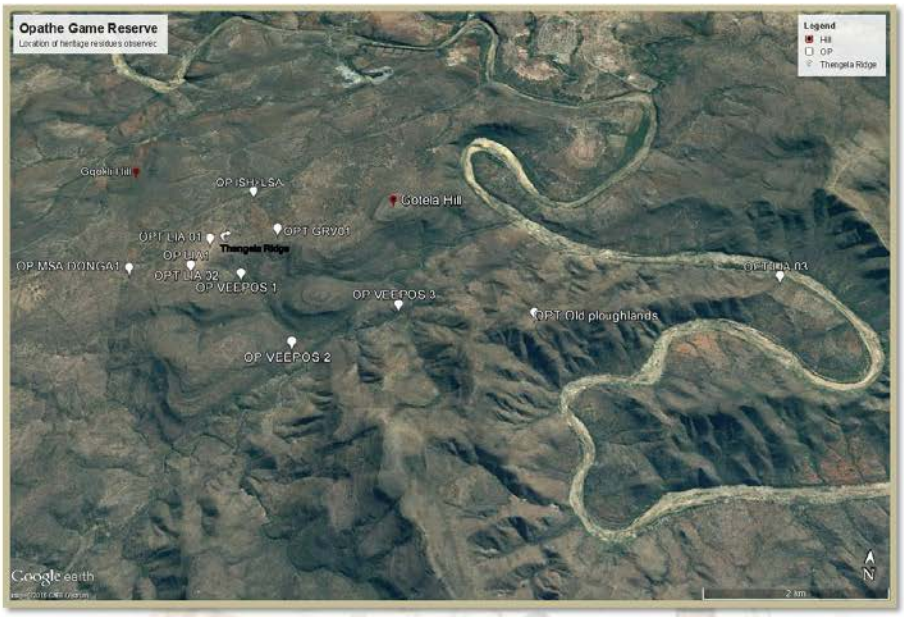


Figure 8 Opathe Reserve: Location of heritage residues observed (see also Google kml. image loaded to SAHRIS)

Figure 9 Late Iron Age / Historical settlement area below Thengela Ridge. Note vegetation clearance.

APPENDIX J

Figure 10

Figure 11

Figure 12

Figure 13

Three historical period cattle-posts (veeposte) were observed during the survey. These all date to the early to late middle 20th C cattle farming activities on the farm Witvoloos. They are conspicuous in the degraded nature of the valley bushveld vegetation and the uniform stands of secondary growth in their immediate vicinity. Surface scatters of broken grinding stones; heat spalled cooking-fire stones; enamel, ceramic and glass bottle residues; and barbed wire and industrial metal remnants litter the respective sites. These were clearly not just temporary encampments, but inhabited for longer periods of time as attested by the food preparation, serving and storage artefacts observed. All three are located within close walking distance of the Opathe River that ensured drinking water for both the livestock and the herders.

Site and Period	Lat	Long	Description and Comments
Ophathe River Veepos 1	28.39172°	31.37105°	All three livestock posts (veeposte) appear to date
Ophathe River Veepos 2	S28.40118°	E31.38004°	to 20th C cattle farming activities. Grinding stones
Ophathe River Veepos 3	S28.39476°	E31.39324°	and heat-spalled cooking-fire stones present +
			enamel and ceramic residues + barbedwire/bottles

Figure 14

Figure 15

Figure 16 Cattle post-note contrast in vegetation

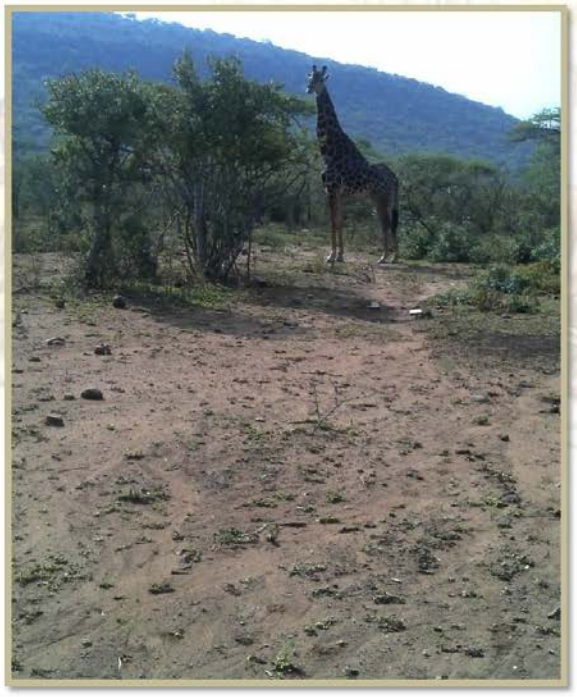


Figure 17 Late – note degraded and trampled vegetation and surface denudation

Discussion

Given the steep and rugged topography of the Opathe Reserve suitable settlement *locales* for Iron Age farmers were limited. The cultural residues observed during this survey clearly indicate that the study area has been traversed and utilised for millennia but settlement was limited. Along the bank of the Mfolozi River, comprising the north east boundary of the Park, tantalising small pockets of cultural debris (fire-spalled cooking stones, random fragments of both upper and lower grinders) indicate the possible presence of more intensive settlement in this zone (OP LIA3). However, deep sands occur here, up to 50 m from the current river alignment, a product of both the flood deposition during Cyclone Demoina in 1984 and down slope wash of leucocratic soils derived from the underlying granitic gneisses. Consequently, any settlement and potential iron smelting sites along these slip-off slopes, has been deeply masked by the extensive sandy overburden.

Apart from further future reconnaissance of the farm Stockville along the south eastern boundary of the Park, the author is confident that this survey has investigated the most possible loci for settlement during the Holocene. The study area lies within an actively eroding environment and the probability of chance finds being exposed in the future is high.

In conclusion, the eThembeni team hereby express their sincere gratitude for the logistical assistance and support provided by both Amafa and Ezemvelo-KZN Wildlife staff in Opathe and the eMakhosini.

Siyabonga

----- X -----

References

Botha, GA; de Villiers, JM; Vogel, JC. 1990. Cyclicity of Erosion, colluvial sedimentation and palaeosol formation in Quaternary hill slope deposits from northern Natal, South Africa. Palaeoecol. Africa (21). pp 195-210.

Botha,GA; Scott, L; Vogel, JC; van Brunn,V. 1992. Palaeosols and Palaeoenvironments during the Late Pleistocene Hypothermal in northern Natal, South Africa. SAJS (88), pp 508 – 512.

Botha,GA; Wintle,AG; Vogel,JC. 1994. Episodic late Quaternary palaeogully erosion in northern KwaZulu-Natal, South Africa. Catena (23). Pp327-340. Elsevier.

Clarke, ML;Vogel, JC; Botha GA; Wintle, AG. 2003. Late Quaternary hillslope evolution recorded in eastern South African colluvial badlands. Palaeo (197). pp.199-212. Elsevier. (http://researchspace.csir.co.za/dspace/bitstream/10204/1394/3/clarke_2003.pdf)

Low, AB. & Rebelo, AG. (eds.) 1996. Vegetation of South Africa, Lesotho and Swaziland. Pretoria: DEAT.

Mucina, L., & Rutherford, MC. 2006.The Vegetation of South Africa, Lesotho and Swaziland. SANBI. Pretoria.

Uken, R; Whitmore, G; Meth,D et al. 2014. KwaZulu-Natal – 3500 million years of geological history. Edu Poster. School of Geological and Computer Sciences. Howard College. UKZN. Durban.

Wadley, L. 2015. Those marvellous millennia: the Middle Stone Age of Southern Africa. Azania. (2).50. pp 155–226. (http://dx.doi.org/10.1080/0067270X.2015.1039236)