



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

Conservation, Partnerships & Ecotourism

BLINKWATER NATURE RESERVE

Protected Area

MANAGEMENT PLAN



Blinkwater Nature Reserve Protected Area Management Plan



Conservation, Partnerships & Ecotourism

Prepared by

Ezemvelo KZN Wildlife

Protected Area Management Planning Unit

& Blinkwater Nature Reserve Planning Committee

Developed 2017

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PREFACE

Ezemvelo KZN Wildlife has adopted an overarching protected area management strategy that focuses on developing, together with stakeholders - a Protected Area Management Plan for Blinkwater Nature Reserve. This management plan is its primary and overarching management document and sets out the desired state for Blinkwater Nature Reserve and the objectives to achieve this desired state. It forms the framework within which the protected area will be managed towards the achievement of its management objectives, derived in collaboration with the protected area's stakeholders during May 2017.

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 Blinkwater Nature Reserve, hereby commits itself to the implementation of this plan.

Chief Executive Officer

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


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EXECUTIVE SUMMARY

Introduction

The 742.3684 ha [GIS area 742 hectare] Blinkwater Nature Reserve (NR) is situated in the Umzinyathi and UMgungundlovu District Municipality. The reserve is situated south west of Greytown with two other protected areas located in the general area, i.e. Umvoti Vlei to the north east and Karkloof Nature Reserve to the south west.

The Blinkwater NR conserves portions of two endangered veld types, Midlands Mistbelt Grassland and Mistbelt Forest. The reserve is known for its diversity of flora and specifically orchids that occur in the grassland. Also found in the reserve is a small population Oribi, (*Ourebia ourebi*) whilst the forests provide habitat for the endangered Cape Parrot (*Poicephalus robustus*) and Samango Monkeys (*Cercopithecus albogularis*).

The reserve forms part of the UMshwathi catchment and many seasonal springs and streams originate from inside the reserve. Some cultural heritage features occur in Blinkwater Nature Reserve but have thus far been unexplored.

This management plan has been developed in consultation with stakeholders that added significant value to the plan. Consultation in the form of stakeholder workshop and public review of the plan was undertaken in mid-2017.

Vision and objectives of Blinkwater Nature Reserve

To protect the grassland and forest with its associated biodiversity, and to provide a core area for expanding conservation compatible Land-use

The key objectives of the reserve will contribute to the achievement of the vision of Blinkwater NR:

- Comply with and enforce legislation pertaining to the protection and management of Blinkwater NR.
- Enable and maintain effective stakeholder relations through communication and collaboration.
- Protect the biodiversity and cultural assets of Blinkwater NR by promoting compatible Land-use and water-use in areas surrounding the reserve.
- Actively promote an understanding and appreciation of the values of Blinkwater NR.
- Contribute to appropriate and sustainable nature based tourism in Blinkwater Nature Reserve.
- Ensure the protection of all cultural and heritage resources within the Blinkwater Nature Reserve in accordance with statutory requirements.
- Protect the ecological integrity of Blinkwater Nature Reserve through active interventions based on principles of adaptive and ecosystem based management.
- Provide adequate human resources, equipment, infrastructure and funding to enable the effective protection, development and management of Blinkwater Nature Reserve.

Management issues, challenges and opportunities at Blinkwater Nature Reserve

In consultation with the management committee and external stakeholders critical issues in the management of the NR have been identified, these include:

- The need for on the ground staff has been raised and in principal approved, there are currently no funds to facilitate this. This is critical and all other functions of the reserve are dependent on the provision of staff capacity.
- Forestry plantations expand to the boundary of Blinkwater with no buffer between the reserve and the plantation. This result in firebreaks burnt inside the reserve boundary and on the same side every year, leading to grassland degradation.
- Lack of agreements with service providers that access the reserve to maintain communication towers.

- There is a need for a cultural heritage survey as all cultural heritage assets is currently unexplored and undocumented. The provincial authority responsible for the protection of cultural heritage will be approached to assist with this.
- The area has potential for environmental education and awareness, this should be done with due consideration for law enforcement issues and is subject to staff capacity.
- The expansion and/or creation of a green area of compatible land use around Blinkwater Nature Reserve is a key strategic outcome that has to be pursued in order to facilitate connectivity and landscape level management.
- Sustainable nature based tourism is currently limited to the hiking trails that traverses the reserve. Opportunities to bring the overnight hiking trail Phasiwe camp back into operation will require permanent staff as well as capital input.
- Alien infestations, especially in specific hotspots where invasive species spread to the reserve from the surrounding timber plantations.
- Poaching and specifically taxi hunts is rife in the reserve due to the lack of law enforcement and on site staff.

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
BNR	Blinkwater Nature Reserve
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, Tourism and Environmental Affairs
EIA	Environmental Impact Assessment
Ezemvelo	Ezemvelo KwaZulu-Natal Wildlife
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EWT	Endangered Wildlife Trust
FP	Financial Plan
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
PA	Protected Area
PFMA	Public Finance Management Act No. 1 of 1999
PPC	Park Planning Committee
SA	Republic of South Africa
SAHRA	South African Heritage Resources Agency
SANDF	South African National Defence Force
SAPPI	South African Pulp and Paper Industry
SAPS	South African Police Service
SDF	Municipal Spatial Development Framework
SMME	Small, Micro and Medium Enterprises
SWOT	Strengths, weaknesses, opportunities and threats analysis
TFCA	Transfrontier Conservation Area
TFP	Transfrontier Park
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WWF	World Wildlife Fund

1 INTRODUCTION

1.1 PURPOSE OF THE PLAN

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

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

1.2 STRUCTURE OF THE PLAN

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 addresses 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 Blinkwater Nature 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 Blinkwater Nature 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.

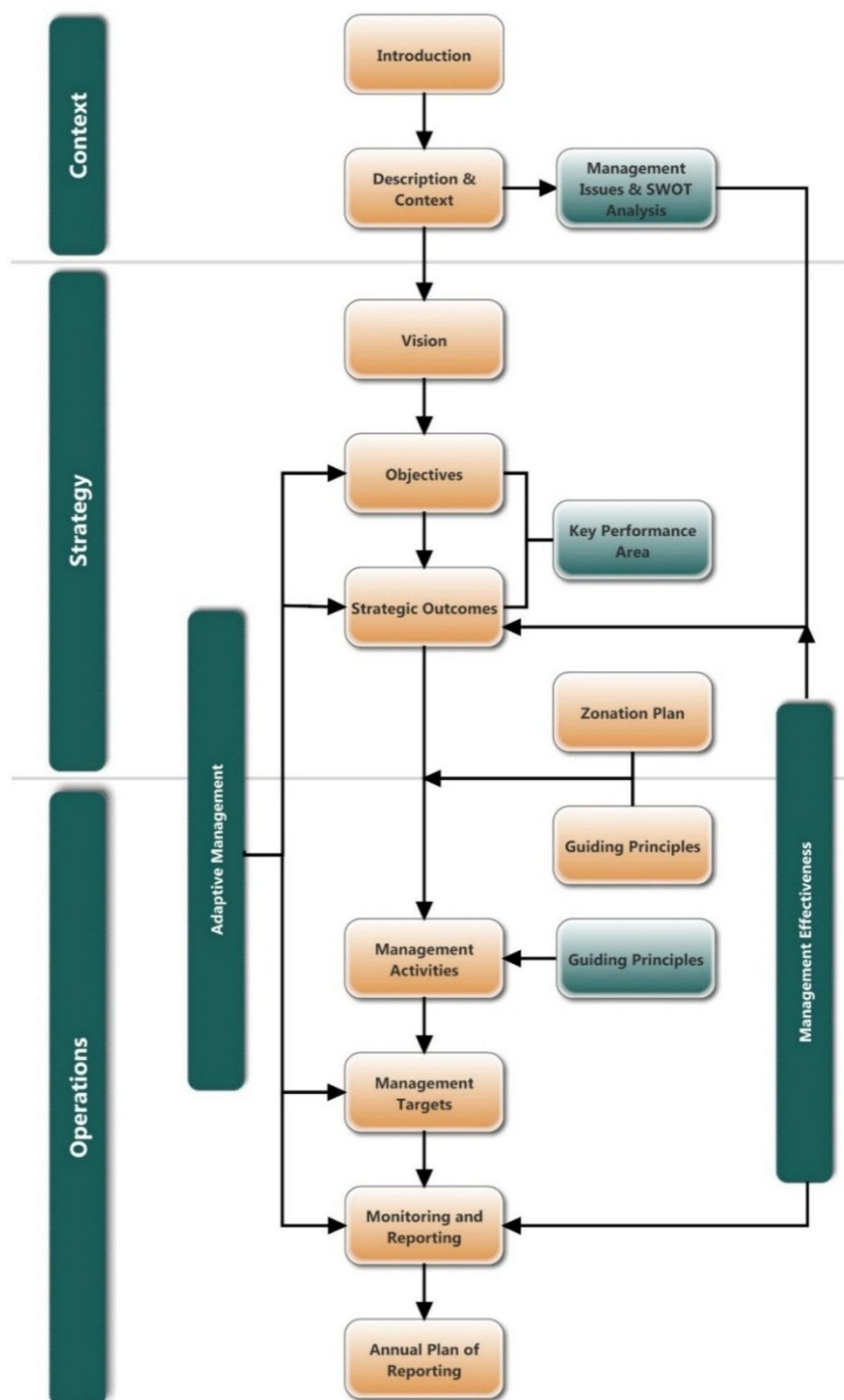


Figure 1: Structure of the protected area management plan

1.3 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. The Invasive species monitoring, control and eradication plan for Blinkwater Nature Reserve still needs to be developed.

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 D 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 tourism development or operational management within the protected area or its buffer areas will thus also require environmental authorisation.

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

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

1.5 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:



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

1.6 PLANNING APPROACH

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

1.6.1 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]

1.6.2 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 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 Blinkwater Nature 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, could 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.

1.6.3 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.

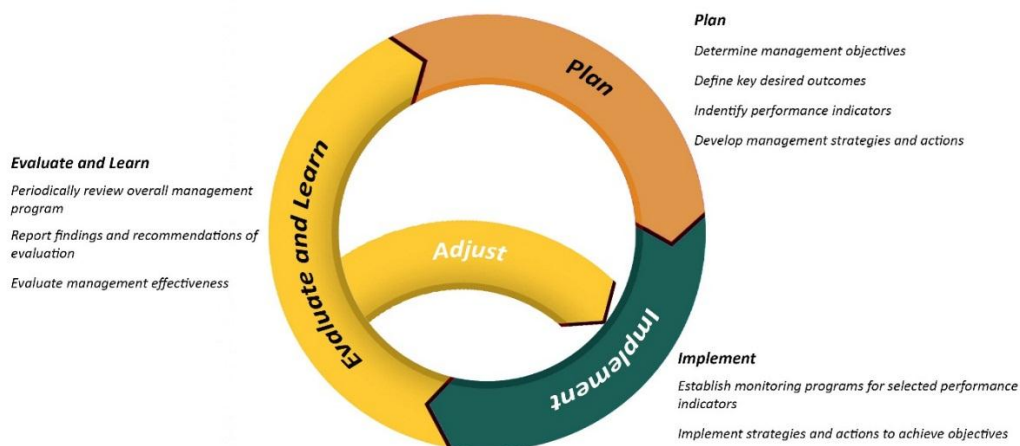


Figure 2: The adaptive management cycle

1.6.4 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 key stakeholders. The initial stakeholder workshop took place on 5 May 2017 at the 7 Oaks Sappi offices. A range of stakeholders attended the meeting and various management issues were raised. The vision for the reserve in the broader landscape was discussed as well as ways of integrating operational issues and planning in the region. Furthermore the plan was made available for public review and comments and suggestions were considered prior to the finalization of this plan. 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.

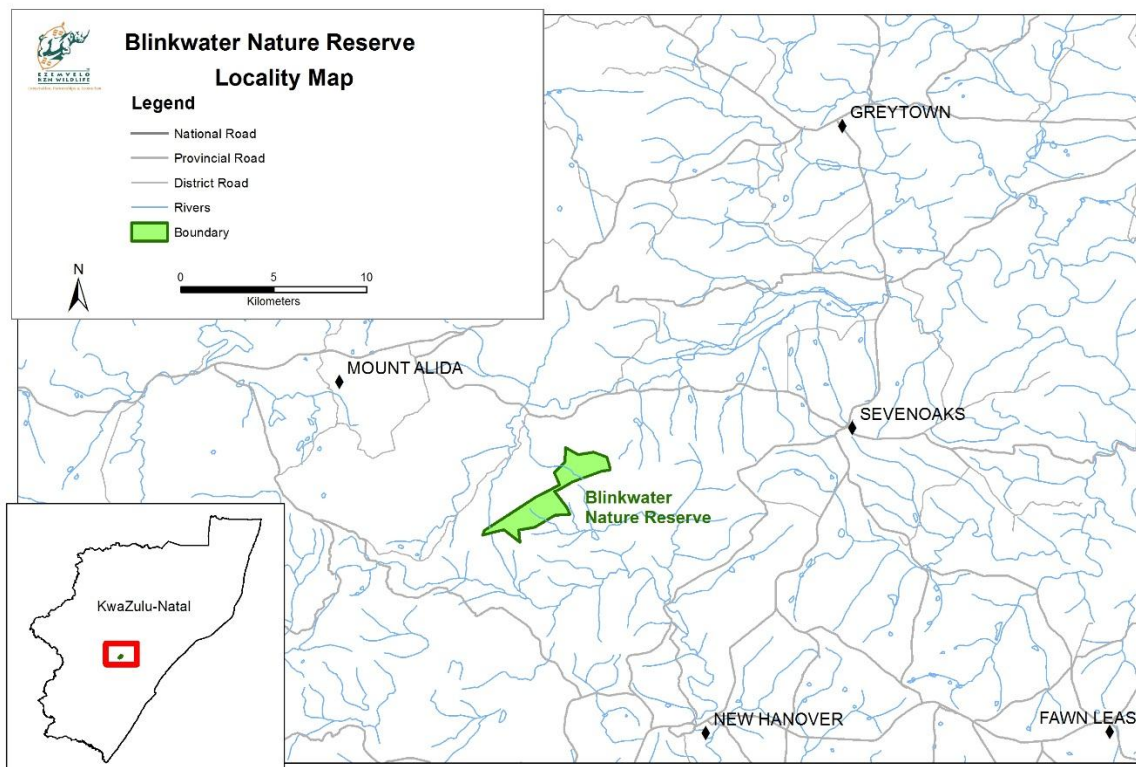
2 DESCRIPTION OF BLINKWATER NATURE RESERVE AND ITS CONTEXT

2.1 BACKGROUND TO BLINKWATER NATURE RESERVE

The 742.3684 ha Blinkwater Nature Reserve is situated in the Umzinyathi and UMgungundlovu District Municipalities, the northern section of the reserve fall under Umvoti Local Municipality, whilst the southern section falls within the UMshwathi Local Municipality. Access to the reserve is through private Sappi owned land just of the D583 district road that runs between the N3 highway and the P151. The reserve is situated south west of Greytown with several other protected areas situated in the general area, including Umvoti Vlei to the north east and Karkloof Nature Reserve to the south west.

The Blinkwater Nature Reserve conserves portions of two endangered veld types, Midlands Mistbelt Grassland and Mistbelt Forest. The reserve is well known for its diversity of flora and specifically orchids and other important species that occur in the grassland. Historically the endangered blue swallows nested in the reserve and although the nest sites have been abandoned for unknown reasons, the reserve still protects this critical habitat for these birds. The reserve is home to a small population Oribi and various other smaller threatened and protected species. Forests provide habitat for the endangered Cape Parrot and Samango monkeys. The reserve also forms part of the UMshwathi catchment and many seasonal springs and stream originate from inside the reserve. Some cultural heritage features occur in Blinkwater Nature Reserve but has this far been unexplored.

Map 1: Locality of Blinkwater Nature Reserve



2.2 THE VALUES OF BLINKWATER NATURE RESERVE

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

The 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 Blinkwater Nature Reserve

Natural values	<ul style="list-style-type: none"> ▪ The Blinkwater Nature Reserve represents an example of what the landscape used to be and is the only natural area in an extremely transformed landscape. ▪ The reserve provide habitat to a wide variety of important plant and animal species including a orchids and flowering plants, Oribi, Cape parrots, Samango monkeys and potentially Blue swallows. ▪ The reserve form part of the UMshwathi catchment and as such play an important role in the conservation of water.
Heritage values	<ul style="list-style-type: none"> ▪ The cultural heritage in the area seems to be significant but have not yet been surveyed and documented. Examples of cultural heritage include an old ox wagon track, San hunting pits in the forest and other.

2.3 THE PURPOSE OF BLINKWATER NATURE RESERVE

Consistent with Section 17 of the Protected Areas Act, the purpose of Blinkwater Nature 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 - especially Oribi (*Ourebia ourebi*), Cape Parrots (*Poicephalus robustus*) , Samango Monkeys (*Cercopithecus mitis*) and many important species of flora;
 - protect an area which is vulnerable or ecologically sensitive, this include wetlands, grasslands and forests in an extremely transformed landscape;
 - 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 tourism;
 - contribute to human, social, cultural, spiritual and economic development; and
 - rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species.

2.4 PROCLAMATION STATUS OF BLINKWATER NATURE RESERVE

The Blinkwater Nature Reserve (742.3684 ha) was proclaimed in Gazette No 83 of 2012 under the National Environmental Management Act 57 of 2003. The reserve has been managed by the Natal Parks Board and later Ezemvelo KZN Wildlife since the nineteen eighties.

The reserve in its current state is made up of the following properties:

- Sub 1 of the farm Blinkwater No. 15752 (314.4521 ha)
- Lot Z No. 4576 (104.6695 ha)
- Remainder of the farm Misgunst No. 1191 (274.5062 ha)
- Remainder Lot AA No. 8080 (48.7406 ha)

A copy of the proclamation of Blinkwater Nature Reserve is contained in Appendix B.

2.5 THE REGIONAL AND LOCAL PLANNING CONTEXT OF BLINKWATER NATURE RESERVE

2.5.1 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.

In terms of the NPAES, areas around the northern boundary of Blinkwater Nature Reserve are identified as priorities for protected area expansion. The protected area falls within Region 37 of the National Protected Area Expansion Strategy focus areas, the Thukela Focus Area in KwaZulu-Natal. **In reality there is little opportunity for expansion and park management will focus on retaining compatible land uses and improving where possible.**

2.5.2 The Provincial Protected Area Expansion Plan

The KwaZulu-Natal Protected Area Expansion Plan (Ezemvelo KZN Wildlife, 2010) also identified areas around the borders of Blinkwater Nature 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 Blinkwater Nature 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. This is exacerbated as the grassland biome and many of its vegetation types are poorly protected.

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

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

2.6 CULTURAL CONTEXT OF BLINKWATER NATURE RESERVE

Although it is clear that there are important cultural features contained within the Blinkwater Nature Reserve, this has not yet been surveyed or documented. Current knowledge of these features are colloquial and mostly known to neighbouring farmers who have been in the area for a long period of time. The features include an old ox wagon track as well as hunting pits.

2.7 THE HISTORY OF BLINKWATER NATURE RESERVE

2.7.1 History of Conservation in Blinkwater Nature Reserve

The original Blinkwater Nature Reserve which is the southern portion of the farm Misgunst 1191, measuring a total of 276.68ha (Blocks 1 & 2) was expropriated from Mr P Meyer who remained a ne The then Natal Parks Board took occupation of the property on 31 March 1988, and still the Blinkwater Nature Reserve was first proclaimed in 2012 by Ezemvelo KZN Wildlife.

Lot AA No. 8080; owned by Mr O Seele, agreed in a verbal agreement with the then Natal Parks Board to regard and utilise this land as part of the reserve, as no other land use is practised on it because of its isolation.

Sub 1 of the farm Blinkwater No. 15752 measuring 314,4521ha, and farm Lot Z No. 4576 measuring 104,6694ha were donated to the Board by HL&H Timber Products (PTY) LTD in 1993 (Deed of transfer T 18915/1995).

The Blinkwater Nature Reserve was overseen and managed by the Greytown District Conservation officer since acquisition until 1994, when the Pietermaritzburg District Conservation officer took over the duties as reserve manager, this is currently still the status.

2.7.2 History of Tourism in Blinkwater Nature Reserve

The Blinkwater Nature Reserve does not have infrastructure or operational mechanisms that makes provision for tourism. Historically the only tourism that took place was the Blinkwater Hiking Trails that traverses the reserve.

During the 1991 World Environment day a representative from the Wildlife Society was taken to the partial ruins of the Douglas Smith Cottage in sited by Douglas Smith's late father, the founder of the Pietermaritzburg Botanical Gardens. It was felt that the cottage that was situated on private land owned by Mr M Melle of HL&H.

A representative of the Wildlife Society attended a trail leaders workshop with the then Natal Parks Board at Queen Elizabeth Park where they were taken to the Bayonsfield trail that was set up in collaboration with the University of Pretoria. The Wildlife Society then approached the University and various other stakeholders including HL&H and Sappi (later taken over by Mondi) to investigate the opportunity to develop a trail in the Blinkwater area, the upper grasslands being land-locked by big timber companies and private land owners which all showed interest and appreciation for the project.

Sappi subsequently built Success Camp, which was lost in a fire some years later and re-vamped the cottage at Mountain Falls. At the same time HL&H re-built the Douglas Smith cottage on the original foundations.

iPhasiwe camp, three Rondavels at Blinkwater Nature Reserve was not yet completed and one of the timber companies stepped in to complete the building of the Rondavels. On 24th of March 1994 with great fanfare including television coverage the trail was officially opened.

In 1995 due to vandalism at the iPhasiwe camp that section of the trail was closed for a couple of years. At this stage interest in the trail waned and the upkeep of the trails were not sufficient. The iPhasiwe camp remain in a dilapidated and unusable state. Over the years some of the overnight facilities was booked by special interest groups who then also visited the Blinkwater Nature Reserve.

2.8 SOCIO-ECONOMIC CONTEXT

The Blinkwater Nature Reserve falls within two local and two district municipalities, the northern section of the reserve falls within uMshwathi Local Municipality under Umzinyathi District Municipality whilst the southern section falls within the Umvoti Local Municipality under the UMgungundlovu District Municipality.

Umvoti Local Municipality (Umzinyathi District):

The Umvoti municipal area contains several protected areas and conservancies, Blinkwater Nature Reserve being one of them. Similar to the UMswathi Local Municipality, the most important industries in the area include agriculture and forestry with tourism also a critical component. The employment rate in the municipal area has decreased in the last year or so but is still of concern. The demographics of the area as reflected in the 2011 census indicate a largely youthful population which contributes to the unemployment problem.

UMshwathi Local Municipality¹ (uMgungundlovu District):

The UMshwathi Local Municipality's main urban centres is New Hanover, Wartburg, Dalton and Cool Air; situated to the north east of Pietermaritzburg, together with several rural settlements exist in the area. The area produces 40 % of Districts sugar cane. The Albert Falls Dam is a well-known bass fishing destination and other tourism features includes the rich cultural heritage, this includes the potential 'struggle heroes' route. Agriculture and tourism is the main land uses in the area as well as forestry. The municipal authorities also plan a road corridor that would link the N2 and N3 and in so doing provide better service infrastructure for the areas industries.

2.9 ECOLOGICAL CONTEXT OF BLINKWATER NATURE RESERVE

The most important medium to long term ecosystem processes responsible for the maintenance and functioning of Blinkwater Nature Reserve as a natural/semi-natural system, and which are affected by management actions and by land use surrounding the protected area, are:

- **Fire:** Fire plays an important role in the cycling of nutrients at a local and landscape scale. Fire is a primary determinant of the extent of forest - in the absence of fire forest would expand at the expense of grassland. Through unselective defoliation fire maintains grass vigour, reduces the effects of selective grazing and creates opportunities for certain cryptic grassland grass species to survive and reproduce - in the absence of fire the grassland would be less species rich. Defoliation and subsequent plant growth caused by fire provides nutritious food for herbivores, and is important for the survival of oribi. The frequency, timing and nature of fire, coupled with climatic conditions and herbivore numbers, determines the effects of fire on the system.
- **Erosion:** Soils derived in situ from the weathering and decomposition of parent material. When the rate of soil formation equals the rate of soil loss then there is no change; soil depth affects plant community structure and composition.
- **Immigration/recolonisation:** The small size of the reserve is likely to result in high rates of local extinction through environmental and demographic stochasticity. The fact that it is almost completely surrounded by exotic plantations and crops, and that very little of this vegetation type still exists, diminishes the possibility of re-colonisation. Management must seek to reduce the rate of accidental extinction's, boost populations where necessary, and attempt to reinstate immigration corridors.
- **Herbivory:** The intensity of herbivory is a function of animal species composition and abundance. Where herbivore species composition is altered, or herbivores are maintained at densities higher or lower than the range under which the system evolved, changes in vegetation structure and composition can be expected.

2.9.1 Climate and Weather

Due to its topographical position, the Karkloof range (of which the Blinkwater Nature Reserve is part) forms the first major barrier to incoming, moist sea air resulting in high orographic rainfall over the area. Besides mist, the area receives a mean annual rainfall of about 1600mm (range 1300 - 2200mm) falling mainly in summer, which is approximately twice that falling in the surrounding lowlands.

The predominant winds are south-easterly in summer, while in winter the north-westerly, dry bergwinds predominate.

¹ Integrated Development Plan (IDP) for uMgundlovu

The mean annual maximum temperature is 18,0°C in February and the mean minimum is 8,4°C in July.

The mean daily minimum and the mean daily maximum for the coldest months are 3°C and 19°C, and for the warmest months 16°C and 27°C respectively.

Being part of the greater Karkloof area, Blinkwater has very defined seasonal climatic patterns that have significant ecological and management implications. Rainfall mostly occurs during the spring and summer seasons. In spring it is associated with frontal conditions that lead to gentle soaking rains. In summer, rain is associated with large convectional storms, and is often very intense and accompanied by hail. It is not uncommon for there to be more than 50 mm of rain in an hour. Such rain can be very destructive in areas where the vegetation cover has been lost, leading to significant episodic soil erosion. This emphasises the importance of sound range management and the role that wetlands play in moderating episodic river flow.

Winter presents its own challenges for management. They are generally very stable climatically; characterised by cold dry conditions and heavy frosts as temperatures regularly sink several degrees below zero. These conditions lead to a near complete die off of all above-ground plant material in the grasslands, resulting in a large amount of flammable material across the landscape.

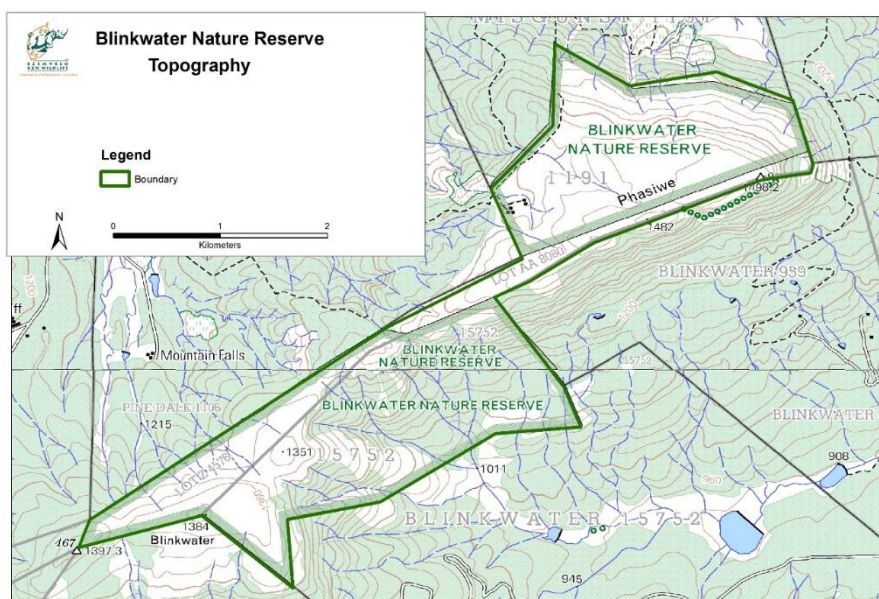
The primary management concern in winter is the strong frontal systems that push in from the south-west of the country. These fronts are preceded by very strong pre-frontal winds that warm as they descend from the Drakensberg escarpment and, because of the dominance of dead grass in the area, create a very significant fire risk across this part of the province. Thus a series of autumn burns are required to meet legal and practical requirements for fire protection, especially in the context of Blinkwater Nature Reserve that is surrounded by commercial timber estates that are prone to devastation by fire. Negligence in fire protection can lead to massive law suits if neighbouring properties suffer loss.

Importantly, although significant effort has to be made to ensure fire risk is minimised, fire is a crucial aspect to the ecology of these grasslands and must be considered a legitimate management tool to ensure their ongoing function. The frontal systems, when they arrive, result temporarily in very cold conditions and occasional snow. Depending on the intensity of the front, livestock and game animals can suffer significant mortality if they do not have access to bushy habitat to escape these conditions.

2.9.2 Topography

See map 2 below.

Map 2: Topography of Blinkwater Nature Reserve



2.9.3 Geology and Soils

The dominant lithology of the area is course-grained sandstone and siltstone with sporadic coal, of the Vryheid formation (Ecca group).

Dark blue grey shale and subordinate thin sandstone of the Volksrust formation (Ecca group) occurs towards the North Western border of the reserve.

The dark grey shale, siltstone and subordinate sandstone of the Pietermaritzburg formation (Ecca group) occurring in the South Eastern part of the reserve is intruded by Jurassic dolerite.

See Map 3 for the Geology of Blinkwater Nature Reserve.

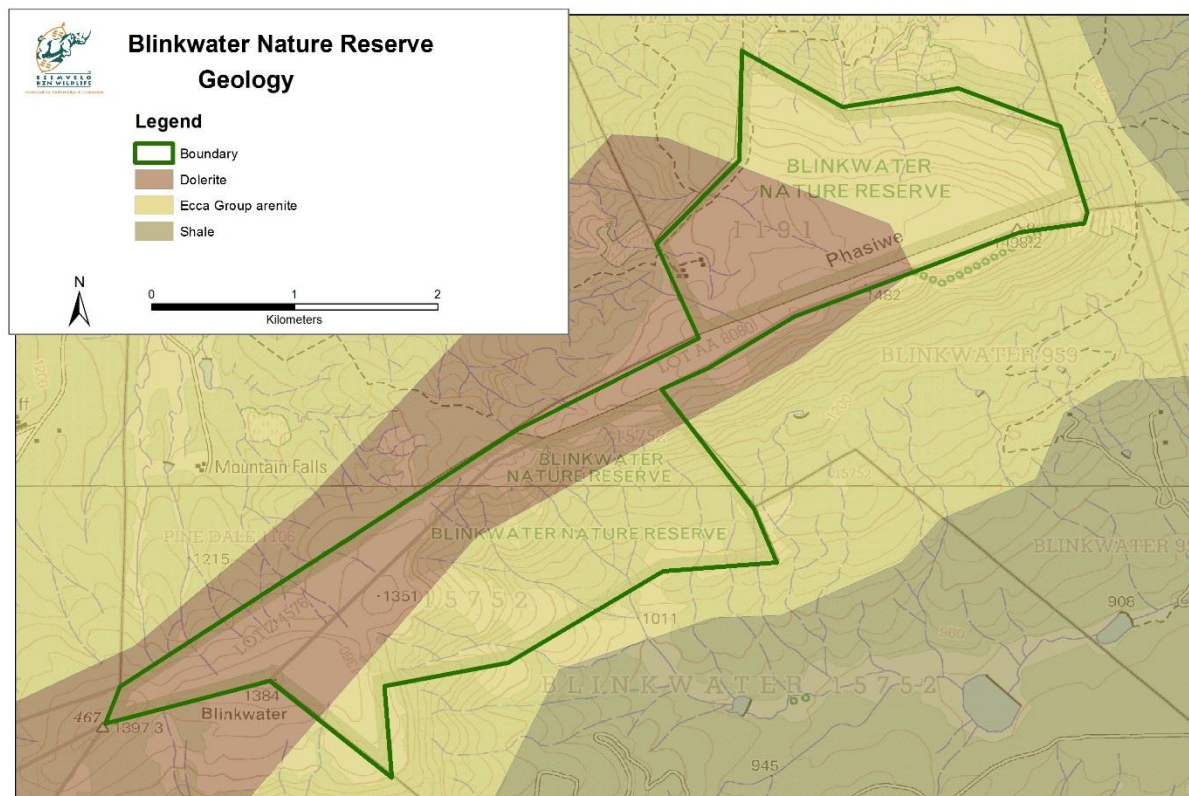
The soil types range from sandy to loamy to clay soils, and are predominantly of the Hutton form.

The following soils can be expected from the parent materials:

Table 3: Soil Forms of Blinkwater Nature Reserve

Parent Material	Soil Form
Lower Ecca (shale)	Griffen, Mispah
Middle Ecca Sediments (sandstones and shales)	Mispah, Griffen, Clovelley
Dolerite/Basalt/Diabase	Inanda, Hutton

Map 3: Geology of Blinkwater Nature Reserve

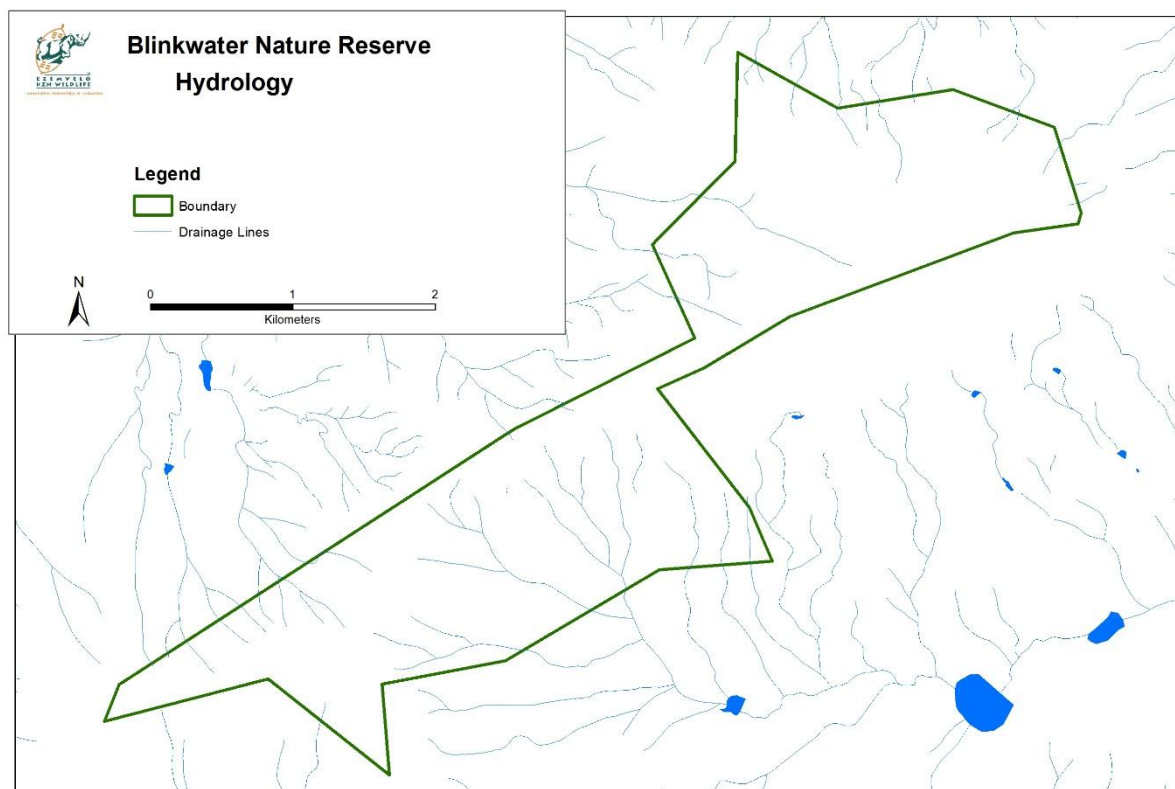


2.9.4 Hydrology

The Reserve falls within the uMswathi catchment. Most of the Reserve is open grassland with frequent seepages. A natural Pan exists on top of the Blinkwater Hill. Two small permanent streams rise on this hill. Many streams and springs resulting from the seepage of underground water exist on the reserve and a feature of their valleys is the presence of sinkholes, which form nesting sites for blue swallows.

See Map 4 for Hydrology of Blinkwater Nature Reserve.

Map 4: Hydrology of Blinkwater Nature Reserve



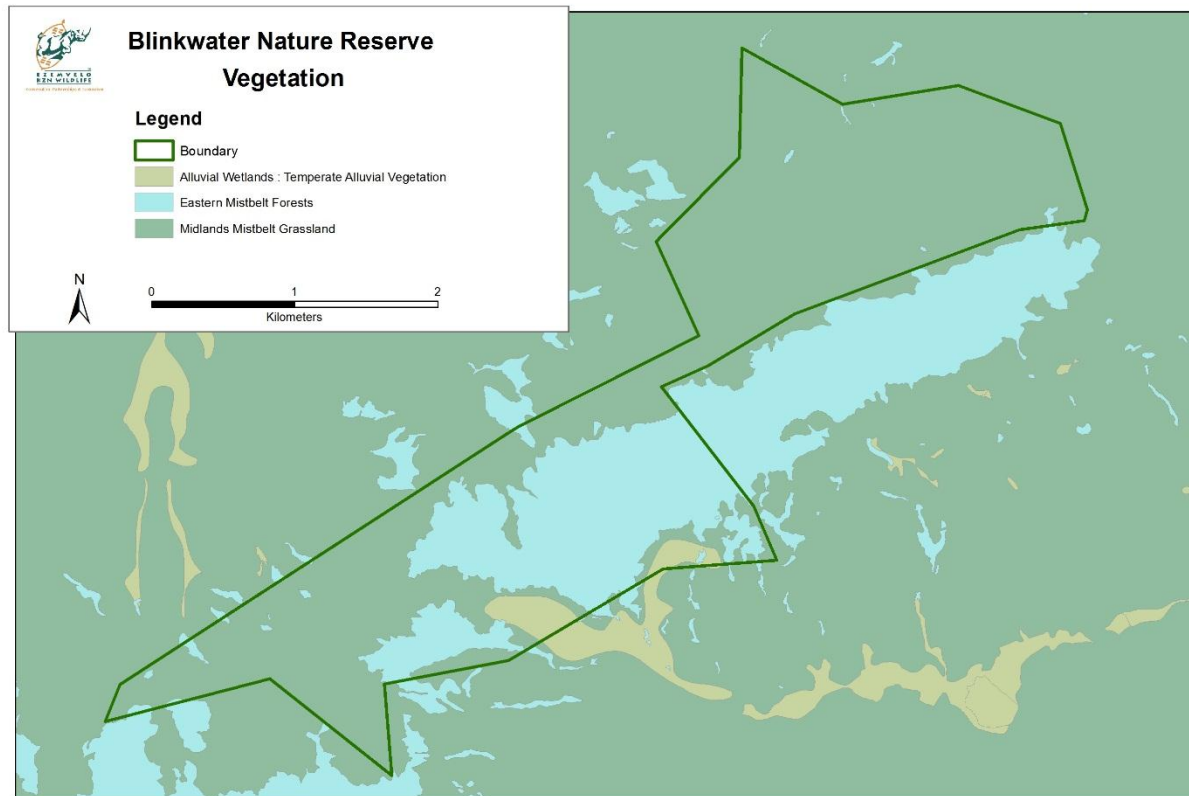
2.9.5 Vegetation

The vegetation of the reserve is classified as Midlands Mistbelt Grassland (Mucina & Rutherford 2006), Veld Type 45 (Natal Mistbelt of Ngongoni Veld) (Acocks 1953). This veld type which is endemic to Kwazulu-Natal is critically under-represented in the protected area system of the province with less than 1% of its area conserved. Further, the majority of this veld type has already been transformed to cropping or afforestation and it is estimated that no more than 3.7%, including the nature reserves, remains in an untransformed state (Bourquin 1996, Scott-Shaw 1996). Blinkwater thus plays a critical role in protecting this veld type, and hence conserving the biodiversity of the province (12 endemic plant species in this veld type).

The majority of the reserve consists of a sour, short grassland, dominated by *Aristida junciformis*, *Themeda triandra*, *Monocymbium cerasiiforme*, and *Trachypogon spicatus*, with a rich diversity of forbs and terrestrial orchids. A transitional Southern Mistbelt forest occurs on the south facing slopes of the ridge, dominated by *Rapanea melanophloeos*, *Cryptocarya woodii*, *Combretum kraussii* and *Xymalos monospora*.

Blinkwater provides habitat for the rare Hilton Daisies (*Gerbera aurantiaca*) and colonies occur in the reserve. Over 60 Species of Orchids have been recorded at Blinkwater, of which seven are extremely rare and are threatened elsewhere. See map 5 for vegetation types and Appendix F for species lists for Blinkwater Nature Reserve.

Map 5: Vegetation Map for Blinkwater Nature Reserve

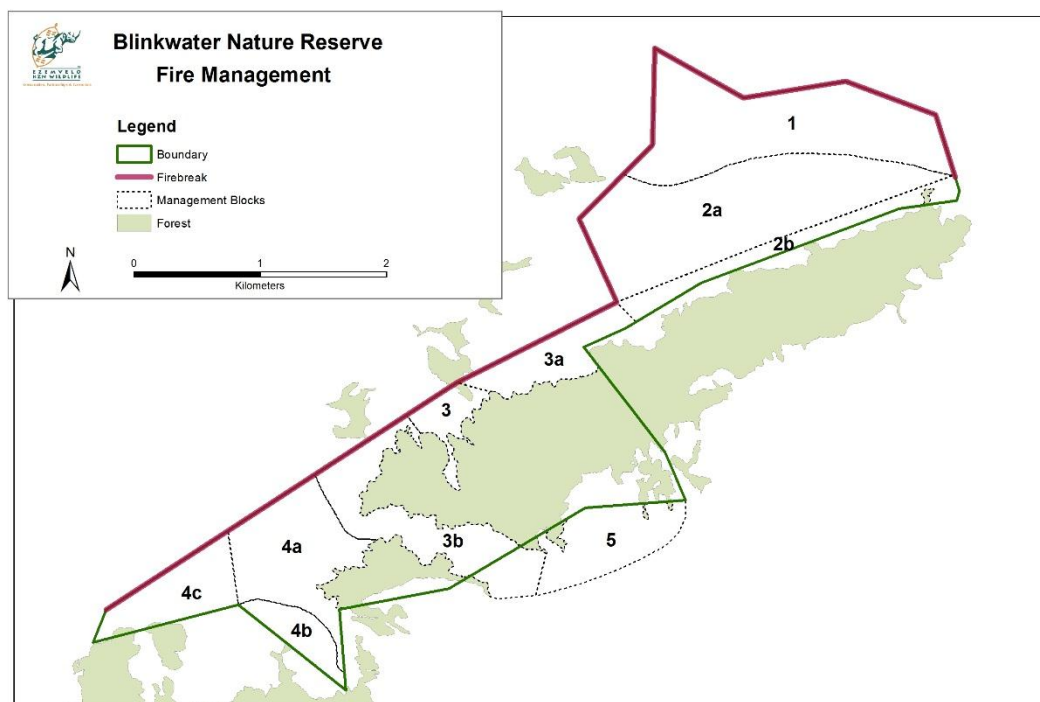


2.9.6 Fire Regime

Fire plays an important role in the cycling of nutrients at a local and landscape scale. Fire is a primary determinant of the extent of forest - in the absence of fire forest would expand at the expense of grassland. Through unselective defoliation fire maintains grass vigour, reduces the effects of selective grazing and creates opportunities for certain cryptic grassland grass species to survive and reproduce - in the absence of fire the grassland would be less species rich. Defoliation and subsequent plant growth caused by fire provides nutritious food for herbivores, and is important for the survival of oribi. The frequency, timing and nature of fire, coupled with climatic conditions and herbivore numbers, determines the effects of fire on the system.

Due to most of the reserve being surrounded by timber plantations, annual boundary firebreaks are required. These should be alternated on either side of the reserve boundary each year but this is not possible as timber plantations adjoin the reserve up to the boundary in most areas. This is leading to grassland degradation due to the same areas being burned annually. Blinkwater Nature Reserve fire is managed on a rotational basis with burning blocks being burned in varying seasons and frequencies to maintain a mosaic of burned and unburned areas. Annual fire inspections are done by the Conservation Manager and Regional Ecologist and burning plans are based on fire history and on these inspections. Map 6 indicates the fire management blocks for Blinkwater Nature Reserve.

Map 6: Fire Management Blocks for Blinkwater Nature Reserve



2.9.7 Invasive Species

Alien plant invasion into Blinkwater results primarily from surrounding plantations and seed spill into the reserve. An ongoing programme of alien plant eradication is essential. The table below indicates the species currently known to be present and their current category classification in terms of NEMBA Act 10 of 2004.

Table 4: Alien and Invasive Species in Blinkwater Nature Reserve

Common Name	Species Name	Category
Black Wattle	<i>Acacia mearnsii</i>	2
Bluegum	<i>Eucalyptis grandis</i>	1b in Nature Reserve
Pine	<i>Pinus spp</i>	1b in Nature Reserve
American Bramble	<i>Rubus cuneifolius</i>	1b
Bugweed	<i>Solanum mauritianum</i>	1b

Key actions for this management plan are the development of the Alien and Invasive species monitoring and control plan for Blinkwater Nature Reserve and as part of this plan, a comprehensive alien plant survey.

2.9.8 Mammalian Fauna

Blinkwater NR is a critical area for the rare oribi antelope (*Ourebia ourebia*). With appropriate and adequate habitat and security management, it is a highly suitable site for the conservation of this species. Oribis favour grassland on flat to gently undulating terrain, where there is both short grass and long grass during the same year (Rowe-Rowe 1994). Short grass is needed to provide easily accessible, nutritious food (Rowe-Rowe 1994), as they feed very selectively on certain grasses or often only on parts of these grasses, as well as on some

forbs. Long grass is required as cover for adults, as well as shelter for the young which are left to lie out for the first eight to ten weeks. Ecological densities range from one oribi per 6 ha to 1 /30 ha, depending on the quality of the habitat and how it is managed. Oribis have not been recorded actually drinking water (Reilly 1988), apparently obtaining sufficient moisture from their mesic diet. A list of mammalian fauna known to occur in Blinkwater NR is given in Appendix F.

2.9.9 Avifauna

The initial purpose for acquisition of the Blinkwater Nature Reserve was the conservation of the Blue swallow *Hirundo atrocaerulea*, which is one of South Africa's rarest birds. The Reserve is one of the last remaining areas for Blue swallow nesting sites in the country. Although the Blue swallow has not been seen at Blinkwater for some years, the habitat the reserve conserves remains suitable and there is a probability of the birds returning to the reserve to nest once again. With this in mind, ongoing management should include annual checking of known nest sites and clearing of nest sites of debris to allow easy access for potential nesting Blue swallows.

The Blue Crane (*Anthropoides paradisea*), another rare and endangered species utilises the reserve as breeding grounds. Blinkwater provides ideal feeding grounds for yet another endangered species - the Wattled Crane (*Bugeranus carunculatus*), which is regularly seen on the Reserve.

Three further habitat specialists, the Cape parrot, Longbilled lark and the Blackwinged plover, all inadequately conserved elsewhere, are known to occur at Blinkwater NR.

Appendix F contains the bird species list for Blinkwater Nature Reserve.

2.9.10 Herpetofauna (reptiles and amphibians)

Reptiles and amphibians form an important part of the ecosystem and certain species serve as bio-indicators due to their sensitivity to environmental factors. Much remains to be discovered about the reptile and amphibian species complement of the area, their life histories, inter-relationships and contributions to the functioning of its ecosystems. Appendix F indicates the reptile and amphibian species list for Blinkwater Nature Reserve.

2.9.11 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. Appendix F contains the Invertebrate species list for Blinkwater Nature Reserve.

2.10 OPERATIONAL MANAGEMENT CONTEXT OF BLINKWATER NATURE RESERVE

2.10.1 Infrastructure

The reserve contains limited infrastructure in the form of a hiking hut and staff Rondavels that has become dilapidated and are no longer in use. The only roads in the reserve is management tracks that are more easily negotiated with a 4 x 4 vehicle. The access roads to the reserve is through Mondi/ Sappi land and in terms of fencing there is no fence in place. When funding for establishing an onsite staff compliment become available the intention is to upgrade both the staff accommodation, as well as the hiking hut – this will allow hikers to not only traverse the reserve through the hiking trails, but also to sleep at the overnight hiking facility.

2.10.2 Staffing Establishment

Currently there is no staff in Blinkwater Nature Reserve to facilitate the implementation of the management activities. The reserve is managed by a District Conservation Manager who is responsible for the

Pietermaritzburg area as well as a second protected area, Doreen Clark. During fire season and for alien and invasive plant control programmes temporary labour is employed from the surrounding community.

2.10.3 Funding Levels at Blinkwater Nature Reserve

The current annual funds available for the Blinkwater Nature Reserve consist of a total of R 623 218 per annum in the form of a government grant. Of the total amount R 595 995 is allocated to Salaries and R 24 223 is available for park operations. This means that Ezemvelo KZN Wildlife currently spend R840/hectare to manage the Blinkwater Nature Reserve. This number is not a true reflection because the manager responsible for Blinkwater Nature Reserve is not permanently based on the reserve, but also responsible for the management of another protected area (Doreen Clarke) and the whole of the Pietermaritzburg district. This implies that the amount per hectare should be lower as only a percentage of time is spent on this reserve. Appendix G contains the financial plan for Blinkwater Nature Reserve.

2.10.4 Management Effectiveness in Blinkwater Nature Reserve

The last management effectiveness assessment for Blinkwater Nature Reserve was done in 2016. The reserve scored 23.13 % and the most critical issues identified were:

- The boundary of the protected area is known by the management authority, but as it is not appropriately demarcated it is not known by local residents or neighbouring land users.
- Potential cultural heritage remains unexplored and no cultural heritage survey has been undertaken and no site management plans developed.
- Lack of the delineation of a zone of influence for Blinkwater Nature Reserve.
- Lack of an environmental education and awareness programme.
- There is no plan for the restoration of degraded areas.
- The lack of implemented monitoring programmes for natural resources.
- Research needs have not been identified.
- The most critical of all identified management issues is that Blinkwater Nature Reserve has no human resource capacity and to an extent the financial resources are inadequate. The financial resources as it pertains to funds for staff is also shared with another protected area as well as the uMgungundlovu district.
- Blinkwater Nature Reserve has no capacity for law enforcement due to the lack of onsite staff.
-
- Because of lack of funds and lack of staff there are also no operational equipment available at Blinkwater Nature Reserve.
- No tourism infrastructure exist except for dilapidated hiking huts as well as limited and dilapidated infrastructure for staff accommodation.
- Land use planning does not take the needs of the protected area into account.

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 Blinkwater Nature Reserve are peer reviewed and evidence based.

2.10.5 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 2016 assessment of Blinkwater Nature Reserve updated by the protected area planning committee.

Table 5: Management effectiveness assessment - Pressures, threats and issues

PRESSURES	THREATS
Alien plants and animals	Land-use change
Erosion	PA isolation
Poaching	Pollution

Figure 3 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

2.11 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

- Water rich area – part of the Umswhati catchment and provide clean water to this catchment.
- Rich biodiversity in the reserve
- Habitat for many important species of animals and plant

WEAKNESSES

- Undocumented cultural heritage
- The need for on the ground staff has been raised and an in principal approval exist, there is currently no funds to facilitate this.
- Lack of agreements with service providers that access the reserve to maintain communication towers.

OPPORTUNITIES

- The area could potentially be used to create environmental awareness, this should be done with due consideration for law enforcement issues and subject to staff capacity.
- The expansion and/or creation of a green belt around Blinkwater Nature Reserve is a key strategic outcome that has to be pursued in order to facilitate connectivity and landscape level management.
- Sustainable nature based tourism

THREATS

- Alien plant invasions (hotspots where aliens come into the reserve from the surrounding timber plantations)
- Poaching and taxi hunts is rife in the reserve due to the lack of law enforcement and on site staff.
- Forestry plantations expand to the boundary of Blinkwater with no buffer between the reserve and the plantation. This result in firebreaks burnt inside the reserve boundary and on the same side every year, leading to grassland degradation
- Uncontrolled fires
- Small size of protected area and protected area isolation which result in small population sizes that are therefore genetically unviable and have a reduced ability to respond to environmental disturbances, and are prone to extinction
- Misperception of the importance of the area's contribution to Nature Conservation and reduced allocation of resources

3 STRATEGIC MANAGEMENT FRAMEWORK

In an effort to ensure that Blinkwater Nature Reserve is effectively managed, the following strategic framework has been developed. It is aimed at providing the strategic basis for the protection, development and operation of the 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 Blinkwater Nature Reserve. The objectives and strategic outcomes that follow are intended to provide the basis for the achievement of the vision. The objectives provide a broad description of the goals for each key performance area. The strategic outcomes, which flow from the objectives, set out what is needed to achieve the objectives, based on the management issues, strengths, weaknesses, opportunities and threats and described in Section 2 above.

3.1 BLINKWATER NATURE RESERVE VISION

To protect the grassland and forest with its associated biodiversity, and to provide a core area for expanding conservation compatible Land-use

3.2 OBJECTIVES AND STRATEGIC OUTCOMES

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

Table 6: Objectives and strategic outcomes for Blinkwater Nature Reserve

KEY PERFORMANCE AREAS	OBJECTIVES	STRATEGIC OUTCOMES
Legal Compliance and Law Enforcement	Comply with and enforce legislation pertaining to the protection and management of Blinkwater Nature Reserve.	<ul style="list-style-type: none"> ▪ Ensure that the full extent of the PA is appropriately demarcated and that the demarcation is known by surrounding communities. ▪ Ensure that there is adequate law enforcement within the Blinkwater Nature Reserve ▪ Ensure effective control of legitimate access in Blinkwater Nature Reserve.
Stakeholder Engagement	Enable and maintain effective stakeholder relations through communication and collaboration.	<ul style="list-style-type: none"> ▪ Constructive interaction and co-operation with community, neighbours and stakeholders ▪ Ensure as far as possible that the Blinkwater Nature Reserve enjoys public support
Buffering Mechanisms & Regional Management	Protect the biodiversity and cultural assets of Blinkwater Nature Reserve by promoting compatible Land-use, and water-use in areas surrounding the protected area.	<ul style="list-style-type: none"> ▪ Ensure that the size and shape of the Blinkwater Nature Reserve is sufficient to achieve its management objectives ▪ Determination of the zone of influence requirements around the Blinkwater Nature Reserve ▪ Ensure that water-use planning and Land-use planning take cognisance of the Blinkwater Nature Reserve objectives.
Environmental Education & Awareness	Actively promote an understanding and appreciation of the values of Blinkwater Nature Reserve.	Implement an effective Environmental education and awareness programme linked to the objectives of Blinkwater Nature Reserve and focussed on the surrounding communities and neighbours
Nature based tourism	Contribute to appropriate and sustainable nature based tourism in Blinkwater Nature Reserve.	Ensure that tourism facilities are maintained to an acceptable standard
Cultural Heritage Resource Management	Ensure the protection of all cultural and heritage resources within the Blinkwater Nature Reserve in accordance with	Ensure that there is sufficient information and understanding of cultural heritage in Blinkwater Nature Reserve to inform and support their management

KEY PERFORMANCE AREAS	OBJECTIVES	STRATEGIC OUTCOMES
	statutory requirements.	
Biodiversity Resource & Conservation Management	Protect the ecological integrity of Blinkwater Nature Reserve through active interventions based on principles of adaptive and ecosystem based management.	<ul style="list-style-type: none"> ▪ Development of a comprehensive fire management plan for the Blinkwater Nature Reserve ▪ Adequate fire safety within the Blinkwater Nature Reserve is ensured ▪ Development of an invasive species control plan for the protected area. ▪ Achievement of a significant reduction in levels of 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.
Operational Management	Provide adequate human resources, equipment, infrastructure and funding to enable the effective protection, development and management of Blinkwater Nature Reserve.	<ul style="list-style-type: none"> ▪ 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

3.3 CONSERVATION DEVELOPMENT FRAMEWORK

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

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 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 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.

3.3.1 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 tourism objectives for the protected area.
- Not all zonation categories have been applied in determining the system of zonation for Blinkwater Nature Reserve, as some are not appropriate to it.
- It is unlikely that a protected area will have all of the zones presented below – only those that are relevant should be presented. In addition, if there is an inland aquatic environment (dam), or a marine or estuarine

environment, additional zones should be added in accordance with the Ezemvelo KZN Wildlife zonation system (2011).

Map 7: Zonation of Blinkwater Nature Reserve

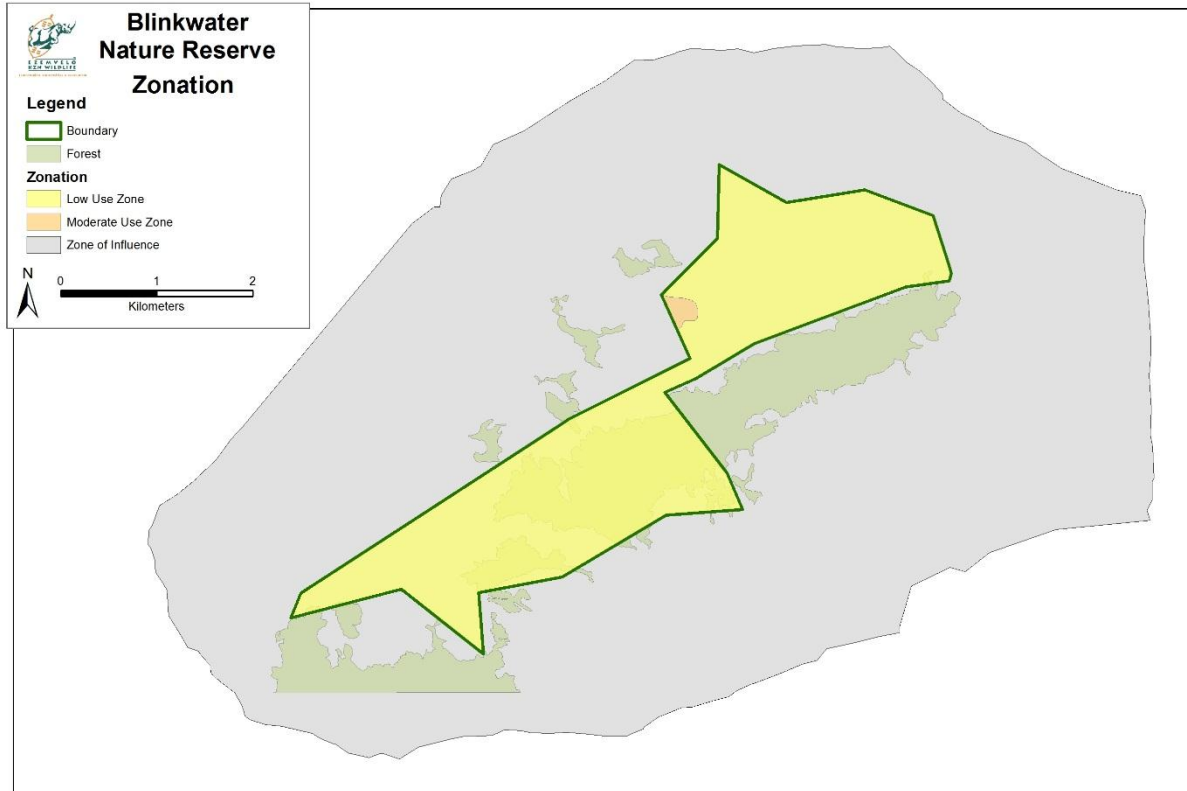


Table 7: Zonation Categories of Blinkwater Nature Reserve

Key feature protection overlay	
Description	An area that is vulnerable and or scientifically important, where specific additional controls are imposed in order to prevent undesirable impacts on identified sensitive or threatened species, habitats, ecosystems, bio-control release sites, research sites, archaeological, living heritage and paleontological sites.
Objective	This zone is for permanent, temporary or seasonal protection of important core protected area values. It aims to provide additional protection for the integrity of key areas.
Activities and infrastructure	<ul style="list-style-type: none"> ▪ The zone may overlay other zones so a range of infrastructure may already exist. ▪ In addition to restrictions of the underlying zone site specific rules and regulations will apply.
Constraints and implementation	<ul style="list-style-type: none"> ▪ This is a protection zone and would only allow for access and development under site specific constraints. (Does not cater for further developments or resource utilization) ▪ This zone provides a higher level of protection than the underlying zone. ▪ Could be permanent, temporary or seasonal overlay. ▪ Changes to this overlay can be implemented through the Park planning committee and

	the annual management meeting and recorded as such.
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 ecotourism principles of low human impact will prevail. The zone also serves as a buffer to the wilderness zone.
Objective	To designate an area for tourism experiences and management activities that are focused primarily on low impact activities and where general sensitivity requires that management and tourism impacts on the natural landscape should be mitigated.
Activities and infrastructure	<ul style="list-style-type: none"> ▪ 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 4 access is provided to points where trails start or to tourist facilities. ▪ Hiking and formalised trails. ▪ Management activities must focus on protecting park resources and core values. Limited management tracks.
Constraints and implementation	<ul style="list-style-type: none"> ▪ 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 a 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	<ul style="list-style-type: none"> ▪ Management roads and tracks. ▪ Management activities are directed to maintaining park infrastructure for biodiversity conservation, park operations, equipment and material storage. ▪ Controlled extractive resource use. ▪ Hiking on formalised trails. ▪ Infrastructure is accessible by motorised access. ▪ The 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	<ul style="list-style-type: none"> ▪ Within the moderate use zone a specific 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 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.

	<ul style="list-style-type: none"> ▪ Examples of developments in a 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 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	<p>The Park management must define these activities in terms of its specific values and objectives and taking into consideration the following:</p> <ul style="list-style-type: none"> ▪ Alien and invasive species management ▪ 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	<p>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.</p> <p>Management activities will focus on:</p> <ul style="list-style-type: none"> ▪ 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.

3.4 ADMINISTRATIVE STRUCTURE

A recommended organisational structure for Blinkwater Nature Reserve is set out in Figure 4. The figure represents the staff complement and positions that are required to enable the effective operation, management and protection of Blinkwater Nature Reserve.

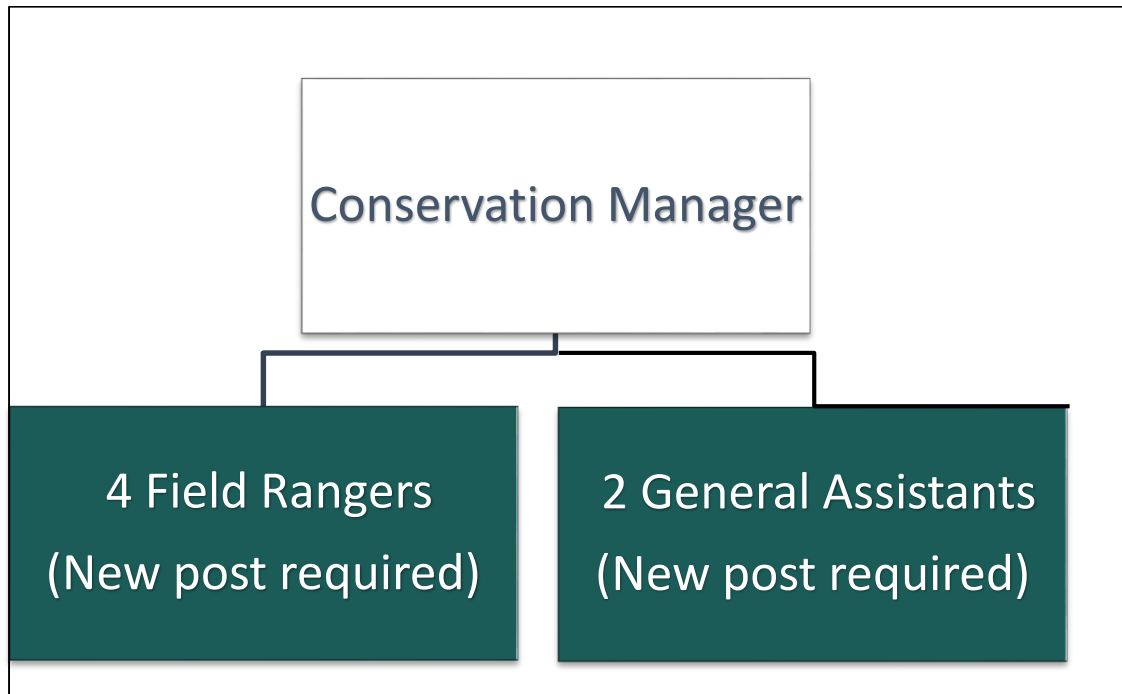


Figure 4: Proposed Administrative Structure of Blinkwater Nature Reserve

4 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 contributed directly to an improvement of the METT score for the Blinkwater Nature Reserve.

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

4.2 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 Blinkwater Nature Reserve will adhere to the following guiding principles:

- All reasonable efforts must be made to ensure the effective conservation of biodiversity within and on the boundaries of the 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. The detailed operational requirements for Stakeholder engagement are set out in Table 8 below.

4.3 CO-MANAGEMENT

Currently there are no settlement agreement in place, although a claim has been lodged. Ezemvelo will implement the outcome of the land claim process.

Table 8: Framework for Legal Compliance and Law Enforcement

Strategic Outcome	Management Activities	Management Target	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
LEGAL COMPLIANCE AND LAW ENFORCEMENT						
Ensure that the full extent of the PA is appropriately demarcated and that the demarcation is known by surrounding communities.	<ul style="list-style-type: none"> Signboards must be displayed at each of the 5 known entry points Communicate awareness of boundary of protected area through presentations/ maps at the PA Liaison forum and other relevant fora 	<ul style="list-style-type: none"> Appropriate demarcation of boundaries and 5 entry points. Knowledge of the boundary by general public 	<ul style="list-style-type: none"> PA map Signage at main access areas Fence specifications and monitoring reports Minutes and presentations at meetings 	<ul style="list-style-type: none"> The boundary is not surveyed and appropriately demarcated to achieve its management objectives The protected area boundary is not known by the general public 	Year 1	Conservation Manager
Ensure that there is adequate law enforcement within the Blinkwater Nature Reserve	Ensure that there is sufficient law enforcement capacity including staff numbers, skills, equipment and support	Capacitated work force that can fulfil the organisation's mandate in terms of law enforcement	<ul style="list-style-type: none"> Organogram Asset register Skills audit Occupational health and safety file Training records 	PA management lacks the capacity or is constrained by limited capacity to enforce the law in keeping with the organisation's mandate	Year 2	Manager with relevant regional and support services staff
	<ul style="list-style-type: none"> Regular patrols covering the full extent of the Blinkwater Nature Reserve (subject to staff capacity) Prosecution of any offender caught committing an offence 	Legal protection of the full extent of Blinkwater Nature Reserve in terms of NEMPAA	<ul style="list-style-type: none"> Park specific rules Standard Operating Procedure Patrol book/reports Occurrence book records Fire records (arson fires) 	<ul style="list-style-type: none"> Increase or frequent recovery of snares Increase in security breaches Recorded losses of game species and/or losses of rare and endangered plants 	Ongoing	Conservation Manager

Strategic Outcome	Management Activities	Management Target	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
			Incident reports	<ul style="list-style-type: none"> Increase in arson fires 		
Ensure effective control of legitimate access in Blinkwater Nature Reserve.	Investigate the existence of servitudes in terms of access and where necessary enter into agreements. This include access to the reserve through Sappi land as well as access of the tower service provider to maintain infrastructure.	Enforcement of conditions of relevant servitudes by Blinkwater Nature Reserve staff	<ul style="list-style-type: none"> Register / copy of servitudes and their conditions on station Copy of any relevant agreement relating to access. 	Lack of knowledge of PA staff or servitudes and their conditions and therefore lack of enforcing these correctly	Year 1	Conservation Manager
	<ul style="list-style-type: none"> Signboards to be displayed at the entry points into the reserve Ensure staff is capacitated to control protected area access (field rangers appointed and trained to regulate access control) 	Effective control measures for protected area access	<ul style="list-style-type: none"> Standard operating Procedures / Station orders Occurrence books records 	<ul style="list-style-type: none"> Ineffective or partially effective control measures to control protected area access. Increase in illegal entry incidents. 	Ongoing	Conservation Manager

4.4 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 9 below.

Table 9: 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	<ul style="list-style-type: none"> Update list of key neighbours and stakeholders of Blinkwater Nature Reserve Maintain membership of the Blinkwater trails management committee. 	<ul style="list-style-type: none"> 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 input into decisions relating to PA management 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	Year 1	Conservation Manager and Community Conservation Officer
Ensure as far as possible that the Blinkwater Nature Reserve enjoys public support	Actively encourage support for the protected area through open communication channels and conflict resolution	An understanding of the extent of or lack of public support	<ul style="list-style-type: none"> Survey results/ minutes of meetings Records of mitigating measures, meetings, minutes and attendance records. 	The protected area is not supported by neighbours and public and there is antagonism towards the protected area management	Annually	Conservation Manager

4.5 BUFFERING MECHANISMS & REGIONAL MANAGEMENT

4.5.1 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 Blinkwater Nature Reserve and to counter any threatening processes or edge effects, suitable buffer zones and appropriate land uses in these zones should be identified. Appropriate actions may then be taken to secure these buffer zones through protected area expansion mechanisms and local planning tools, as described in Section 6.5.2 below. In ensuring the protection of its biodiversity, the following guiding principles will be adopted in terms of protected area expansion and buffer zone management:

- If under threat, efforts must be made to formally protect the areas of critical habitat, located outside of the 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.

4.5.2 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 Blinkwater Nature 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 10 below.

Table 10: Framework for Buffering Mechanisms and Regional Management

Strategic Outcome	Management Activities	Management Targets	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
PROTECTED AREA EXPANSION						
Ensure that the size and shape of the Blinkwater Nature Reserve is sufficient to achieve its management objectives	<ul style="list-style-type: none"> Identify opportunities for protected area expansion / stewardship in areas surrounding Blinkwater Nature Reserve Actively pursue opportunities to ensure appropriate design and size of Blinkwater Nature Reserve 	Programme with appropriate mitigating action to address design and size limitation of Blinkwater Nature Reserve e.g. protected area expansion, stewardship agreements etc.	Map and proclamation of appropriate design based on 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	Year 5	Conservation Manager with legal unit, Planning and Protected Area expansion unit
LOCAL AND REGIONAL PLANNING						
Determination and implementation of the zone of influence requirements around the Blinkwater Nature Reserve	<ul style="list-style-type: none"> Interact with stakeholders within the zone of influence to facilitate operational management e.g. fire Revise and update the zone of influence when required enter into agreements with neighbouring landowners and update when required Negotiate a phased withdrawal of the neighbouring plantations to allow a buffer and allow firebreaks to alternate each year between the two properties. 	<ul style="list-style-type: none"> Knowledge of threatening processes on the Blinkwater Nature Reserve's boundary Spatial representation (map) of the protected area buffer Agreements with neighbouring landowners 	<ul style="list-style-type: none"> Analysis of threat/ threatening processes in buffer area Map of protected area buffer MOA's, MOU's with landowners Biodiversity agreements with landowners 	<ul style="list-style-type: none"> 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 the Blinkwater Nature Reserve's boundary 	Year 2	Conservation Manager with Ecological Advice Unit

	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 Blinkwater Nature 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 Blinkwater Nature Reserve objectives.	<ul style="list-style-type: none"> ▪ 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 Blinkwater Nature Reserve's buffer zones ▪ Incorporate requirements for the Blinkwater Nature 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 ▪ Active membership of the relevant catchment management forum 	<ul style="list-style-type: none"> ▪ 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 	<ul style="list-style-type: none"> ▪ IDP of Local and District municipality that acknowledges the importance of and requirements for the protection of the Blinkwater Nature 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 	<ul style="list-style-type: none"> ▪ Identification / approval of environmentally harmful land uses on the boundaries of the Blinkwater Nature 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

4.6 ENVIRONMENTAL EDUCATION AND AWARENESS

Environmental interpretation and education of Blinkwater Nature 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 Arbour Day should be encouraged.

The detailed operational requirements for Environmental education and awareness are set out in Table 11 below.

Table 11: 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 Blinkwater Nature Reserve and focussed on the surrounding communities and neighbours	<ul style="list-style-type: none"> Develop and implement an environmental education and awareness programme for the Blinkwater Nature Reserve (This should focus on the values and objectives of the protected area) Compile information and material relating to Blinkwater Nature Reserve and its values for presentation to school groups/ communities & stakeholders <p><i>These activities are subject to provision of staff capacity</i></p>	<ul style="list-style-type: none"> Increased capacity and understanding of the importance of the protection of Blinkwater Nature Reserve by stakeholders and surrounding communities School visits in the surrounding community as per the environmental education and awareness programme) 	<ul style="list-style-type: none"> Education and awareness programme and attendance lists Effectiveness of assessment / monitoring documentation 	<ul style="list-style-type: none"> Lack of understanding and awareness of the values of the protected area and biodiversity conservation in communities around the protected area 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 	Year 3	Community Conservation Officer

4.7 TOURISM MANAGEMENT & DEVELOPMENT

4.7.1 Tourism product development and management

Ezemvelo KZN Wildlife has the mandate to sustainably develop Blinkwater Nature Reserve to fully realise its eco-cultural tourism and associated income-generating potential, within the context of protecting its biodiversity and cultural values. In further developing and managing tourism within the protected area, the following guiding principles should be adhered to:

- 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 tourism products, requirements for environmental authorisation must be considered and adhered to.
- Tourism products should be designed to capitalise on the unique beauty and biodiversity features of the protected area.
- Tourism products should be developed in response to tourism market demands and opportunities within the protected area and should be carefully assessed to determine their viability.
- The development of tourism products within the protected area must be integrated with tourism strategies and plans in the region.
- Tourism should be used as a tool for the generation of economic activity and employment in the communities surrounding the protected area.
- 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 Tourism are set out in Table 12 below.

Table 12: Framework for Tourism Management and Development

Strategic Outcome	Management Activities	Management Targets	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
NATURE BASED TOURISM						
Ensure that tourism facilities are maintained to an acceptable standard	<ul style="list-style-type: none"> Collaborate with trails committee to ensure hiking trails are maintained and subject to availability of funds (Blinkwater trails) upgrade the hiking huts. <p><i>This activity remains dependant on staff capacity</i></p>	Fully functional and safe tourism facilities	<ul style="list-style-type: none"> Minutes & attendance registers of Trails Committee meetings Scheduled maintenance and where required rehabilitation plan Occupational health and safety file Tourist satisfaction feedback 	<ul style="list-style-type: none"> Limited interaction with tourism operators Increased number of visitor conflicts Lack of visitor satisfaction Degradation of conservation values due to tourism operators / visitors impact 	Ongoing	Conservation Manager Blinkwater Nature Reserve with the Blinkwater Trails Management Committee

4.8 BIODIVERSITY RESOURCE & CONSERVATION MANAGEMENT

4.8.1 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 detailed operational requirements for fire management are set out in Table 13 below.

Table 13: Framework for Biodiversity Resource & Conservation Management - Fire Management

Strategic outcome	Management activities	Management targets	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
FIRE MANAGEMENT						
Development of a comprehensive fire management plan for the Blinkwater Nature Reserve	<ul style="list-style-type: none"> ▪ Annual pre-burn assessment ▪ Ecological fires burnt as per the fire management plan ▪ Post-burn monitoring and recordkeeping (Fire returns) 	Adoption and implementation of the fire management plan	<ul style="list-style-type: none"> ▪ 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 1	Manager BNR and Ecological Advice Unit
Adequate fire safety within the Blinkwater Nature Reserve is ensured	<ul style="list-style-type: none"> ▪ 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, 	Compliance with the National Veld and Forest Fires Act	<ul style="list-style-type: none"> ▪ Fire returns ▪ Letters to neighbours to inform them of burning ▪ Notices placed informing stakeholders of burning ▪ Training registers ▪ Fire Protection Association membership and meeting minutes 	<ul style="list-style-type: none"> ▪ 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 to non-compliance with the National Veld and Forest Fire Act 	Ongoing	Manager Blinkwater Nature Reserve

4.8.2 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. The Alien and Invasive species monitoring and control plan for Blinkwater Nature Reserve will be actioned through this management plan.

4.8.3 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 14 below.

Table 14: Framework for Biodiversity Resource & Conservation Management - Invasive Plant Control & Soil Erosion

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.	<ul style="list-style-type: none"> 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 	Compliance with the Biodiversity Act 10 of 2004 Section 76	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Further spread of existing levels of infestation of listed invasive species Persistence of existing infestations New infestations of listed invasive species 	Year 1 and then annually	Conservation Manager, Ecological Advice Unit and Alien Plant Control Unit
Achievement of a significant reduction in levels of invasive plant infestations in the protected area.	<ul style="list-style-type: none"> Implement concerted, sustained control efforts in identified areas of invasive plant infestation based on the invasive control plan Undertake suitable rehabilitation measures, including re-vegetation using indigenous plant species, to prevent soil 	<ul style="list-style-type: none"> Set attainable reduction targets in the invasive species control plan, and implement these targets 	<ul style="list-style-type: none"> MoU/MoA with strategic partners Monitoring records and reports of alien and invasive plant control efforts 		Year 5	Ezemvelo KZN Wildlife Alien Plant Control Unit and Conservation Manager

Strategic Outcome	Management Activities	Management Targets	Target Indicator (Evidence)	Indicators of Concern	Priority	Responsibility
INVASIVE PLANT CONTROL						
	erosion, following clearing of invasive plant species <ul style="list-style-type: none"> Develop partnerships with Working for Water and other strategic programmes Dependant on control plan requirements once developed.		<ul style="list-style-type: none"> Maps and photos indicating changes in infestations due to control efforts 			
SOIL EROSION CONTROL						
Implementation of procedures to identify, rehabilitate and manage areas that have been significantly impacted by soil erosion	<ul style="list-style-type: none"> 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 Undertake preventative measures in areas with low plant cover that may be at risk of soil erosion 	Effective soil erosion control measures in areas in which plant cover is low, which are susceptible to erosion	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Further erosion of impacted areas Sedimentation impacts in watercourses and wetland areas 	Year 5	Conservation Manager

4.8.4 Alien animal control

Alien animal species can threaten the ecological, genetic or natural aesthetic integrity of Blinkwater Nature Reserve and can be vectors for the spread of diseases. In dealing with the control of alien animals, procedures to deal with animals that stray into the 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).
- The Alien and Invasive species monitoring and control plan for Blinkwater Nature Reserve needs to be developed and is actioned through this management plan.

4.8.5 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 15 below.

Table 15: 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.	<ul style="list-style-type: none"> Together with neighbouring communities, agree on the approach to dealing with stray livestock and domestic animals found in the protected area, particularly dogs, which may be used for illegal hunting 	<ul style="list-style-type: none"> Creation of cooperative structures between Ezemvelo KZN Wildlife, local communities and law enforcement officials Control of any alien animals found within the protected area 	<ul style="list-style-type: none"> Policy to address control of feral animals and the use of domestic animals in the protected area Incident records Occurrence book reports 	Uncontrolled access of domestic animals or livestock within the protected area.	Year2	Manager BNR
RESOURCE UTILISATION						
If extractive resource use is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy.	<ul style="list-style-type: none"> 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 value all extractive resource use 	Ecologically sustainable extractive resource use that benefits local communities	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Permits for bioprospecting Monitoring records/ returns 	Illegal collection of biological material or samples.	If required	Conservation Manager and Regional Ecologist

4.8.6 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 Blinkwater Nature 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 16 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 16: Management Strategies for Large Herbivores

Species	Target / Carrying Capacity	Rationale	Management Strategy	Status	Key Threats
Oribi (<i>Ourebia ourebi</i>)	To be determined when current population numbers is established	Oribi populations continue to decline, placing the species in the Endangered category (Friedman and Daly 2004) Population size and productivity should be maximised to provide a source of animals for surrounding areas and/or to establish/boost other populations until oribi conservation targets for the province are achieved (Marchant <i>et al.</i> 2005).	Ecological Process Management	To be determined	<ul style="list-style-type: none"> ▪ Illegal hunting with dogs ▪ Inappropriate grassland management, especially fire management ▪ Competition with other ungulates

4.8.7 Biodiversity Targets

The 2011 version of the KwaZulu-Natal systematic biodiversity plan identifies the provincial biodiversity targets referred to in Section 6.6.6, above. The conservation of Blinkwater Nature Reserve contributes towards the achievement of a portion of some of these targets. Targets will continue to be updated as knowledge develops about the ecology of areas, connectivity between them, and other process requirements for ecosystems, communities and species. On this basis, the conservation targets should be viewed as a set of working hypotheses around which conservation planning and evaluation can take place. An advantage of developing strategies around targets is that this process highlights critical knowledge deficits thus guiding future research.

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

Table 17: Biodiversity Targets² to which Blinkwater Nature Reserve Contributes

Feature	Description	Percentage of provincial target located within Blinkwater Nature Reserve	Notes
Midlands Mistbelt Grassland	Vegetation type	0.93	Endangered
Eastern Mistbelt Forests: Midlands	Vegetation type	0.39	Endangered
<i>Watsonia canaliculata</i>	Plant	62.34	Vulnerable
<i>Senecio exuberans</i>	Plant	5.35	Endangered
<i>Plectranthus rehmannii</i>	Plant	29.34	Least Concern
<i>Kniphofia buchananii</i>	Plant	1.01	Least Concern
<i>Gerbera aurantiaca</i>	Plant	108.99	Endangered
<i>Geranium natalense</i>	Plant	1.66	Data Deficient
<i>Dierama luteoalbidum</i>	Plant	22.22	Vulnerable
<i>Asclepias woodii</i>	Plant	5.38	Endangered
<i>Sheldonia burnupi</i>	Mollusc	0.10	
<i>Euonyma lymneaeformis</i>	Mollusc	1.17	
<i>Spinotarsus glomeratus</i>	Millipede	0.90	
<i>Doratogonus peregrinus</i>	Millipede	6.86	
<i>Doratogonus natalensis</i>	Millipede	4.99	
<i>Doratogonus montanus</i>	Millipede	0.26	
<i>Centrobolus tricolor</i>	Millipede	0.45	
<i>Centrobolus lawrencei</i>	Millipede	30.05	
<i>Ourebia ourebi</i>	Mammal	1.70	Endangered
<i>Whitea coniceps</i>	Grasshopper	1.34	
<i>Whitea alticeps</i>	Grasshopper	0.87	
<i>Pagopedilum martini</i>	Grasshopper	2.56	
<i>Eremidium erectus</i>	Grasshopper	1.66	
<i>Orachrysops ariadne</i>	Butterfly	0.51	
<i>Charaxes xiphares penningtoni</i>	Butterfly	0.05	
<i>Hirundo atrocaerulea</i>	Ave	1.22	Vulnerable
<i>Proandricus adriani</i>	Annelid	33.33	
<i>Chilota dilatatus</i>	Annelid	50	

² Please note that these are modelled distributions

Table 18: 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.	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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
	Establish current population size of Oribi and implement a monitoring programme	Annual Oribi count report	<ul style="list-style-type: none"> Monitoring reports Population trend graphs and reports 	Ecological degradation as a result of overstocking of wildlife species Complaints from tourist due to understocking of wildlife species	Year 1	
Development and implementation of a strategy for human/wildlife conflict	Apply appropriately humane methods, if animals must be destroyed or captured	Effective procedures and relationships with neighbours in dealing with human/wildlife conflict	<ul style="list-style-type: none"> Records of preventative actions Incident reports Permits 	Frequent complaints from neighbours with no clear response	Year 1	Conservation Manager

CONSERVATION TARGETS						
Ensure that there is sufficient information and understanding of biodiversity in Blinkwater Nature Reserve to inform and support the achievement of specific biodiversity objectives	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Priority species, habitat and ecosystem conservation targets List of required information/ research needs Information management system containing supporting information 	<ul style="list-style-type: none"> Priority species, habitats and ecosystems have not been identified Information is not sufficient to support planning and decision making 	Year 1 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 Dependant on availability of staff capacity <i>Dependant on staff availability</i>	Achievement of protected area conservation targets	<ul style="list-style-type: none"> Surveillance and monitoring plans for key threatening processes 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 extent of soil erosion	Year 3	Ezemvelo KZN Wildlife Ecological Advice Unit
	Audit and update the species list for Blinkwater Nature Reserve.	Updated species list	<ul style="list-style-type: none"> Ezemvelo Biodiversity Database 	<ul style="list-style-type: none"> Outdated information Lack of information to base management decisions on 	Year 2, then ongoing	

4.8.8 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 Blinkwater Nature 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 Blinkwater Nature 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 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 19 below.

Table 19: 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 that there is sufficient information and understanding of cultural heritage in Blinkwater Nature Reserve to inform and support their management	Undertake a formal cultural heritage investigation	Developing a critical set of cultural heritage information to support planning and decision making	<ul style="list-style-type: none"> Cultural heritage values included in protected area management plan Cultural heritage report for Blinkwater Nature Reserve 	<ul style="list-style-type: none"> Cultural heritage sites not known Lack of sufficient cultural heritage knowledge to base planning and decision making 	Year 5	Conservation Manager with AMAFA
	Facilitate in partnership with AMAFA the identification and recording of all cultural heritage sites and values within the Blinkwater Nature Reserve		<ul style="list-style-type: none"> Photographic and descriptive records of heritage sites Maps indicating cultural heritage List of required information/ research needs Information management system containing supporting information 	No cultural heritage investigation has been undertaken and therefore no management of these resources are taking place.		
	Identify & prioritise research needs for cultural heritage management in Blinkwater Nature Reserve & develop partnerships with institutions to facilitate these		<ul style="list-style-type: none"> Prioritised research list that address management needs MoU's with institutions for the implementation of these research 	<ul style="list-style-type: none"> Research priority list MoU with partners Published research 	Research is not taking place or do not address management's needs	Year 3

Strategic outcome	Management activities	Management targets	Target indicator (Evidence)	Indicators of Concern	Priority	Responsibility
		priorities				
Ensure the protection and the improved awareness of the cultural heritage resources and values of Blinkwater Nature Reserve	Develop & implement site specific management plans including a Collections plan for all cultural heritage sites of significance in Blinkwater Nature Reserve	Effective guidelines for management of all cultural heritage sites in Blinkwater Nature Reserve	Management guidelines for each heritage site	Vandalism or damage to heritage sites due to inappropriate tourism or management activities	Year 5	Conservation Manager with Amafa

4.9 OPERATIONAL MANAGEMENT

4.9.1 Financial and human resources

Blinkwater Nature 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 Blinkwater Nature Reserve to ensure the protection of its biodiversity and cultural values and the continued provision of its ecosystem services.

Commercial operations within the Blinkwater Nature 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 Blinkwater Nature Reserve to undertake the operations required for its effective management.

4.9.2 Facilities and infrastructure

In order for Blinkwater Nature Reserve to operate appropriately, adequate facilities and infrastructure need to be developed and maintained both for management and eco-cultural tourism purposes. In addressing facilities and infrastructure needs in the 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 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 20 below.

Table 20: 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> An understanding of the PA's financial requirements Secure and sufficient budget to address critical protected area needs 	<ul style="list-style-type: none"> Budget proposals and budget allocations Budget request Annual plan of operation Commitment ledger 	<ul style="list-style-type: none"> Inadequate funding to effectively protect and operate the protected area 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	<ul style="list-style-type: none"> Employ sufficient, appropriately skilled staff to meet the management and operational requirements of the Blinkwater Nature Reserve Undertake regular training and skills development to ensure that staff are able to effectively complete their duties 	<ul style="list-style-type: none"> Staff establishment that is adequate for the achievement of critical management needs Protected area staff adequately skilled for the execution of their duties 	<ul style="list-style-type: none"> Organogram Training requests, records and registers 	<ul style="list-style-type: none"> Staff establishment is inadequate for the achievement of critical management needs Protected area staff lack skills for protected area management No skills development programme 	Year 2	Ezemvelo KZN Wildlife Regional Management Unit and Conservation Manager

Strategic outcome	Management activities	Management target	Target indicator (Evidence)	Indicators of Concern	Priority	Responsibility
FINANCIAL RESOURCES						
Ensure that there is an effective staff management programme in place	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 Ensure that any chemical or listed substances that are required to be stored or handled by protected area staff are 	PA management effectively and fully implement the requirements in the Occupational Health and safety Act No 85 of 1993	<ul style="list-style-type: none"> 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

Strategic outcome	Management activities	Management target	Target indicator (Evidence)	Indicators of Concern	Priority	Responsibility
FINANCIAL RESOURCES						
	stored and handled in a safe way					
FACILITIES AND INFRASTRUCTURE						
Ensure that facilities and infrastructure in the protected area are adequately maintained	<ul style="list-style-type: none"> Should capital funding be made available a cattle fence to keep cattle out and to facilitate demarcation will be erected. 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	<ul style="list-style-type: none"> Fence inspection reports and maps Infrastructure schedule and inspection reports 	<ul style="list-style-type: none"> Environmental, health or safety incidents associated with inadequately maintained facilities and infrastructure Regular escape of key species due to inadequate fencing 	Ongoing	Conservation Manager
	Ensure that where relevant agreements exist with service providers that traverse the reserve to access the towers on the northern section of the reserve.	Access agreement with tower service providers	<ul style="list-style-type: none"> Copy of agreement or MoU 	<ul style="list-style-type: none"> Unregulated access to the reserve 	Year 1	Conservation Manager and Regional Management
	Should funding be made available and staff housing be upgraded, this should be done in line with relevant legislation and with environmentally responsible technology and service infrastructure	Environmentally responsible infrastructure / technology	Specifications for infrastructure with environmentally responsible technology	Unsustainable infrastructure that are not environmentally responsible	When funding becomes available	Conservation Manager

5 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.

5.1 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 Blinkwater Nature Reserve is set out in Table 21.

Table 21: 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 Blinkwater Trails Management Committee	Written record	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
Fire management	Burning of firebreaks as part of fire management	Written record/map/photography	Annually	Conservation Manager	Annual report
	Burning of blocks as part of controlled burning		Annually		Annual report
	Unplanned wildfires	Written record/map/photography	Per event		Record of event
Invasive plant control	Areas subject to invasive plant control	Monitoring plan	To be determined	Conservation Manager supported by Ecological Advice Unit	Annual report
	State of areas in which invasive plants have been eradicated				
	Records of labour hours/days	Written record	Annually		Annual report
	Herbicide usage	Written record	Annually		Annual report
Soil erosion control	Areas subject to erosion control	Monitoring plan	To be	Conservation	Annual report

Management issue	Parameters to be monitored	Monitoring measures	Monitoring frequency	Responsibility	Reporting requirements
	State of rehabilitated areas of erosion		determined	Manager supported by Ecological Advice Unit	Annual report
Biodiversity 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, and the management of key species	Monitoring plan, monthly biological returns	Monthly	Conservation Manager supported by Ecological Advice Unit	Annual report, Monthly biological returns
Resource utilisation	Extraction of resources from the protected area	Photographs/written records, monthly biological returns	Per event	Conservation Manager	Annual report, monthly biological returns
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 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 21 the following issues require a surveillance plan:

- The influx of listed invasive vegetation on the Blinkwater Nature Reserve's boundaries.

In addition, the following issues require a monitoring plan:

- Measures taken to control invasive plant species.
- Measures taken to control soil erosion.
- Measures taken to manage rare and endangered species, particularly those for which conservation targets have been set.

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.

5.2 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 Blinkwater Nature 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.

6 Blinkwater Nature Reserve annual plan of operation

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

6.1 IMPLEMENTATION OF THE PROTECTED AREA MANAGEMENT PLAN

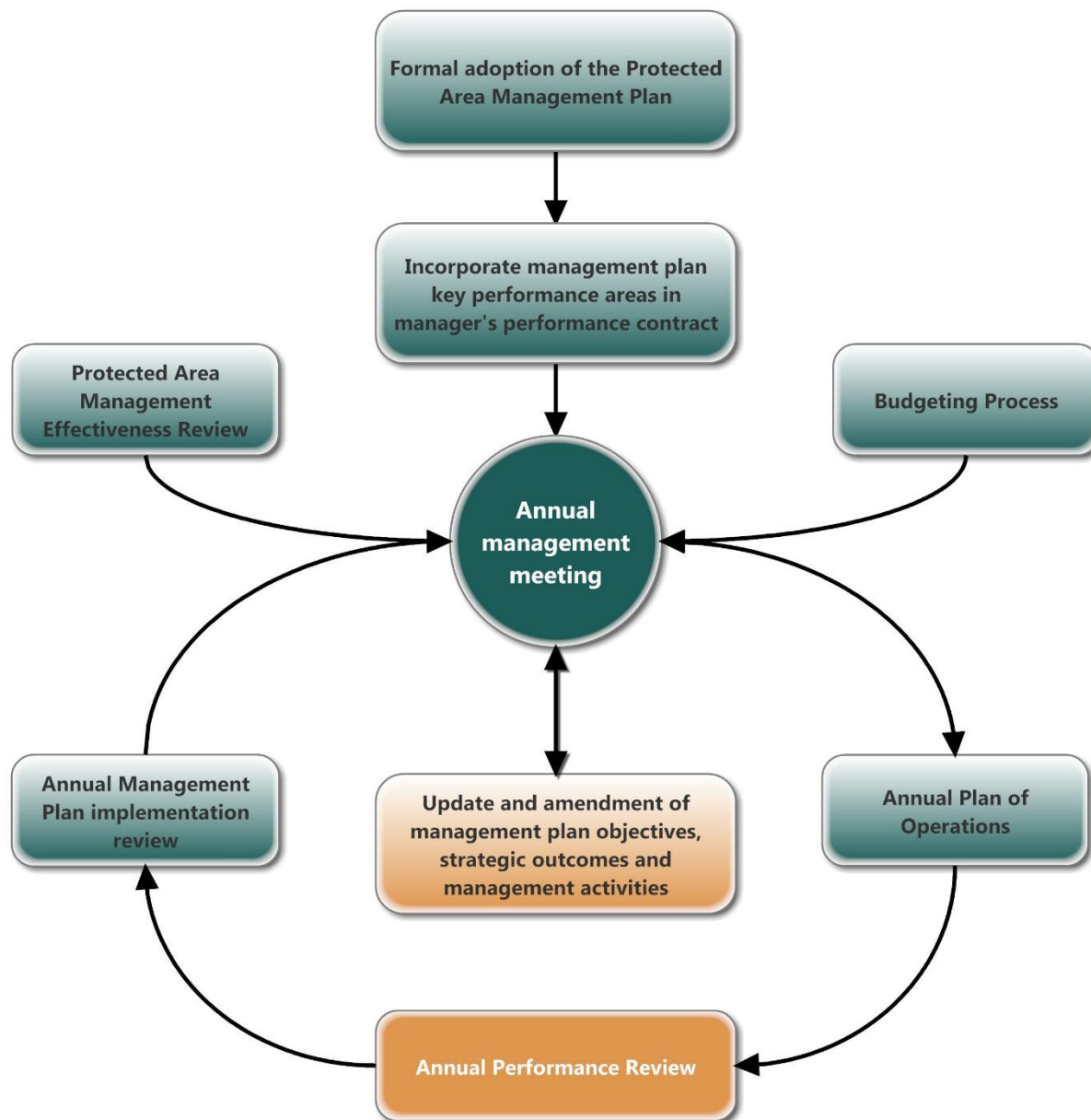


Figure 5: Process for the implementation of Protected Area Management Plans

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 Blinkwater Nature 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 Blinkwater Nature 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 serve as 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.

6.2 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.

6.3 BLINKWATER NATURE RESERVE RESOURCE REQUIREMENTS

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

6.3.1 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.

6.3.2 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:

- Upgrade of staff houses and overnight hiking facilities at Pashiwe camp.
- Installation of demarcation signage at all entry points to the reserve.
- Building a cattle fence XXX km.

6.4 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.

6.5 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.

6.6 FINANCIAL REPORTING

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

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