EZEMVELO KZN WILDLIFE™
Conservation, Partnerships & Ecotourism

NKANDLA FOREST COMPLEX

Protected Area

MANAGEMENT PLAN

Incorporating: Nkandla Forest Reserve, Dhlabe Nature Reserve (NR), Edodweni NR, Mndunduzeli NR, Mome NR, Sibudeni NR, Vungwini NR





Nkandla Forest Complex:

Nkandla Forest Reserve

Dhlabe Nature Reserve

Edodweni Nature Reserve

Mndunduzeli Nature Reserve

Mome Nature Reserve

Sibudeni Nature Reserve

Vungwini Nature Reserve

KwaZulu-Natal

South Africa

Protected Area Management Plan

Prepared by
Ezemvelo KwaZulu-Natal Wildlife
Protected Area Management Planning Unit
and Nkandla Forest Complex Planning Committee

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This Protected Area Management Plan for Nkandla Forest Complex is recommended by the Nkandla Forest Complex Planning Committee (NRPC), a multi-disciplinary team consisting of:

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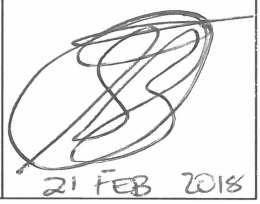
APPROVAL

This Management Plan for the Nkandla Forest Complex is approved by:

TITLE	NAME	DATE	SIGNATURE
KwaZulu-Natal MEC: Department of Economic Development, Tourism and Environmental Affairs	Ms S. Zikalala	21 FEB 2018	 21 FEB 2018

Recommended:

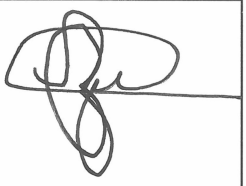
TITLE	NAME	DATE	SIGNATURE
Chairperson: KZN Nature Conservation Board	Mr Z Zulu	2/11/17	

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

AMENDMENTS PAGE

Date	Amendment	Amendment Nu, Page Nu and date	Approved by	Signature

PREFACE

This Protected Area Management Plan for Nkandla Forest Complex is its primary and overarching management document. It forms the framework within which the forest complex will be managed and developed towards the achievement of its management objectives, derived in collaboration with the protected area's stakeholders.

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

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

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

Ezemvelo KwaZulu-Natal Wildlife, as the appointed Management Authority for Nkandla Forest Complex, hereby commits itself to the implementation of this plan.

Dr M.D. Mabunda
A/Chief Executive Officer

EXECUTIVE SUMMARY

Introduction

The Nkandla Forest Complex (NFC) consists of the following reserves:

- Nkandla Forest Reserve,
- Dhlabe Nature Reserve (NR),
- Edodweni NR,
- Mndunduzeli NR,
- Mome NR,
- Sibudeni NR,
- Vungwini NR,

The Nkandla Forest Complex is situated 50km north-west from the town of Eshowe and 20km south of the town of Nkandla. The Forest Complex falls within the Nkandla Local Municipality and the uThungulu District Municipality. The Forest Complex covers 3791 Ha of land and was initially proclaimed between 1918 and 1948. In 1992, the NFC was re-proclaimed under the KwaZulu-Natal Nature Conservation Act of 1992.

The NFC was established to conserve and represent a rare relict type of high wet rain forest, of which very few examples survive. The Nkandla Forest Reserve is moreover of profound historical value for the Zulu people. The forest was frequently used as a refuge in time of trouble and in 1906; Bambatha took refuge in Mome gorge from the British. The grave of King Cetshwayo kaMpande, who died in 1884, lies adjacent to Nkandla Forest Reserve.

The NFC offers low scale tourist activities such as walking trails, picnic sites and bird watching.

The Nkandla Forest Complex comprises of Ngome-Nkandla Scarp Forest, Eastern Valley Bushveld, Midlands Mistbelt Grassland and Moist Coast Hinterland Grassland. Plant species of importance includes Aloe saundersiae and Pachycarpus rostratus which are critically endangered and endemic to South Africa. The Natal Flamebush (*Alberta magna*), Assegai (*Curtisia dentata*), Natal Wing-nut (*Atalaya natalensis*) and the Wild Camphor (*Cryptocarya myrtifolia*) are all near threatened, to the exception of the Wild camphor (*Cryptocarya myrtifolia*) which is vulnerable according to the South African Red Data Book.

Important fauna species present in the NFC includes the Sclater's Forest Shrew (*Myosorex sclateri*) which is endangered, the Schreiber's Long-fingered Bat (*Miniopterus schreibersii*) which is near threated and the Blue duiker (*Philantomba monticola bicolor*) which is vulnerable according to the South African Red Data Book.

Bird species of special importance are the Cape Parrot (*Poicephalus robustus*), Lanner Falcon (Falco biarmicus), Bush Blackcap (*Lioptilus nigricapillus*), African Broadbill (*Smithornis capensis*), Africa Crowned Eagle (*Stephanoaetus coronatus*) and the Orange Ground-Thrush (*Zoothera gurneyi*) which all are near threatened. The Martial Eagle (*Polemaetus bellicosus*), Eastern Bronze-naped Pigeon (*Columba delegorguei*) and the Ground Hornbill (*Bucorvus leadbeateri*) are vulnerable.

The NFC is also home to butterfly species that are endemic and restricted to KwaZulu-Natal (KZN) such as the Karkloof Blue (*Orachrysops ariadne*), Zululand Emperor Swallowtail (*Papilio ophidicephalus zuluensis*) and the Silver-barred Charaxes (*Charaxes druceanus druceanus*). Two terrestrial snails that are endemic and restricted to KZN and found in the NFC are the Discus Pinwheel (*Trachycystis placenta*) which is critically endangered and the Haygarth's Pinwheel (*Trachycystis haygarthi*) which is endangered.

The forest complex is home to reptiles and amphibian species such as the Zululand Dwarf Chameleon (*Bradypodion nemorale*), Spotted Bush Snake (*Philothamnus semivariegatus*), Natal Ghost Frog (*Hadromophryne natalensis*) and the Natal Moss Frog (*Anhydrophryne hewitti*).

Public consultation has been undertaken through a series of meetings and discussions with key stakeholders culminating in a key stakeholder workshop, held on the 19th of November 2014 at the Nkandla Community Hall. The discussions focussed on the purpose of management plans, the vision of the forest complex, the values of the forest complex and the ideas, issues, threats and opportunities. Furthermore, the draft management plan has been made available for public review and comment prior to its finalisation. This process has ensured a great deal of valuable input into the development of the management plan, the outcomes of which have been incorporated into it.

Management issues, challenges and opportunities at Nkandla Forest Complex

The Nkandla Forest Complex faces a number of issues which puts the security of the forest complex at risk. At a number of areas, illegal roads have been developed and the boundary fence have been removed in certain areas. This has lead to the issue of cattle grazing within the forest complex. These all have implications such as soil erosion and the movement of alien invasive plant species into the Nkandla Forest Complex. Staff are isolated within the Forest Complex as there is no formal supply of electricity and water is collected off weirs and pumped to camp sites. There have been reports of poaching, arson fires and collection of items from the Forest Complex.

Managing the issues, challenges and opportunities at Nkandla Forest Complex

Key management interventions required will include the replacement and maintenance of the boundary fence which will stop a number of issues mentioned above. A management plan will have to be developed to address the issue of alien invasive plant species. Processes will be put into place to address the issue of no electricity at the staff establishments.

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.

Records of recommendations for update/changes to the plan should be kept so that when the plan is revised, these recommendations can be assessed and included where necessary. This should be undertaken in the form of a running list, which is updated in each annual report so that the final annual report before the review of the management plan contains the complete list of recommendations. 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 Operations Committee (OPSCOM) before being subjected to the appropriate stakeholder participation process and before OPSCOM recommends that the proposed amended protected area management plan be submitted for authorisation to the Ezemvelo KZN Wildlife Board and to the MEC.

ABBREVIATIONS

AMAFA	Amafa aKwaZulu-Natali (KwaZulu-Natal Provincial Heritage Agency)
A.S.L.	Above sea level
APO	Annual Plan of Operation
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CCA	Community Conservation Area
CDP	Concept Development Plan (Component of Ezemvelo KZN Wildlife protected area management planning process)
CEO	Chief Executive Officer
CRMP	Cultural Resource Management Plan
CMS	Co-management Structure
DAE	KwaZulu-Natal Provincial Department of Agriculture and Environmental Affairs
DCO	District Conservation Officer
DEA	National Department of Environmental Affairs
DWA	National Department of Water Affairs
EIA	Environmental Impact Assessment
Ezemvelo	Ezemvelo KwaZulu-Natal Wildlife
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EWT	Endangered Wildlife Trust
FC	Forest Complex
FP	Financial Plan
FPA	Fire Protection Association in terms of the National Veld and Forest Fire Act (No.1 of 1998)
GDP	Gross Domestic Product
GIS	Geographical Information System
IDP	Municipal Integrated Development Plan
IUCN	International Union for the Conservation of Nature
KZN	KwaZulu-Natal Province of the Republic of South Africa
KZNCMA	KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997)
KZNHRA	Kwa-Zulu Heritage Reasources Act 1997, (Act No. 10 of 1997)
MEC	Member of the Executive Council

MoA	Memorandum of Agreement
MoU	Memorandum of Understanding
MP	Management Plan
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEMPAA	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
NFC	Nkandla Forest Complex
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NPAES	National Protected Area Expansion Strategy
NR	Nature Reserve
NRPC	Park Planning Committee
NSBA	National Spatial Biodiversity Assessment
OCNPA	Operations Committee Northern Protected Areas
PA	Protected Area
PFMA	Public Finance Management Act, 1999 (Act No. 1 of 1999)
PPC	Park Planning Committee
SA	Republic of South Africa
SAHRA	South African Heritage Resources Agency
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
TFP	Transfrontier Park
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WWF	Word Wildlife Fund

1. BACKGROUND

1.1. Purpose of the plan

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

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

1.2. Structure of the plan

Table 1: Structure of the management plan for Nkandla Forest Complex

Section 1:	Provides an introduction and background to the management plan and Nkandla Forest Complex.
Section 2:	Establishes the context of the forest complex, providing the basis for the strategic and operational management frameworks that follow.
Section 3:	Sets out the vision and objectives that must be achieved in efforts to effectively conserve the forest complex.
Section 4:	Sets out the zonation of the Nkandla Forest Complex, outlining the permissible land uses in particular zones.
Section 5:	Describes the administrative structure required to effectively manage Nkandla Forest Complex.
Section 6:	Sets out the detailed management targets that must be achieved in managing the forest complex.
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.

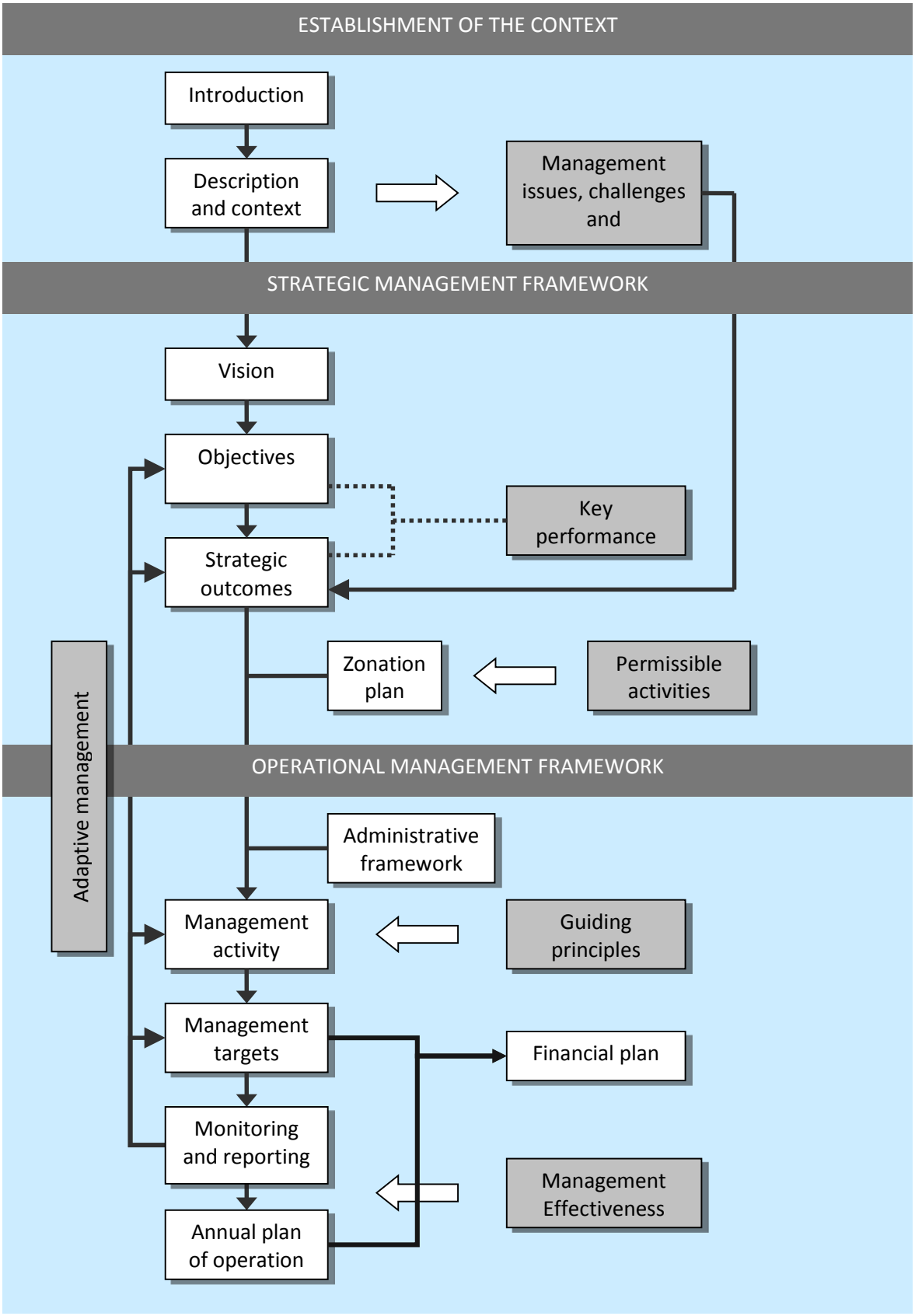


Figure 1: Structure of the Protected Area Management Plan

1.3. Introduction

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Bird species of special importance are the Cape Parrot (*Poicephalus robustus*), Lanner Falcon (*Falco biarmicus*), Bush Blackcap (*Lioptilus nigricapillus*), African Broadbill (*Smithornis capensis*), Africa Crowned Eagle (*Stephanoaetus coronatus*) and the Orange Ground-Thrush (*Zoothera gurneyi*) which all are near threatened. The Martial Eagle (*Polemaetus bellicosus*),

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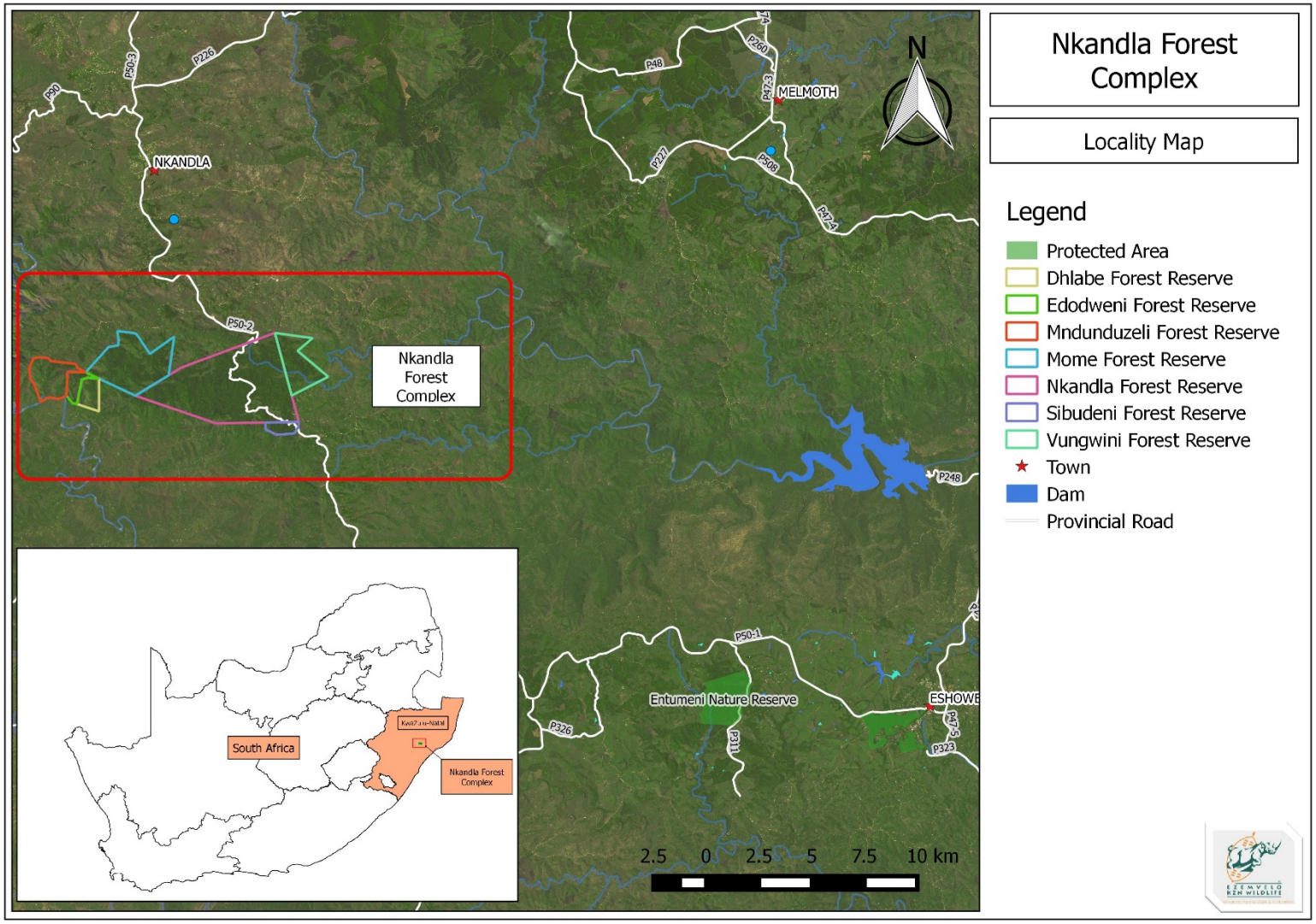
See Map A - Regional location of Nkandla Forest Complex.



Map A: Regional Location of Nkandla Forest Complex

1.4. The values of Nkandla Forest Complex

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

The 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 predominantly unaltered by human activity.

Human activities within the Nkandla Forest Complex that threaten the integrity of or a component park's ecosystems will not be permitted. Where ecosystem integrity is threatened by human activities outside the park, Ezemvelo KZN Wildlife will initiate collaborative action with relevant stakeholders to eliminate or reduce the threat.

- Forests act as sponges in high-rainfall zones, absorbing rainwater into aquifers and releasing it slowly throughout the year into streams and rivers. This is especially important in dry months when rainfall is either nil or very low. Forest streams generally flow throughout the year.

  Where forests have been destroyed and the land used for other purposes, streams have dried up and become seasonal, ceasing to provide perennial water. This is without doubt one of the most important values of indigenous forest and it is a value which will become increasingly more important with the growing demand for water in the future.
- Forests also protect soil in high rainfall areas. The impact of rain drops is reduced by trees and shrubs and because of the high moisture content of forest soils, rain water is readily absorbed and run-off or loss of soil from these areas is minimal. Furthermore, the accumulation of organic matter in forests helps to build up soils.
- Forests help to purify air by the absorption of carbon dioxide and release of oxygen to the atmosphere.
- Forests are a unique ecosystem and habitat-type and form part of one of the world's major biomes.
- Forests are important for wildlife since many species of fauna and flora are confined to these biomes and cannot survive outside them. Some of these species provide food for man.
- Forests yield important and rare timbers which are in increasing demand for building materials and furniture manufacture.
- Forests also yield material for medicines and medical research.
- Forests provide a unique genetic bank of species diversity, all with different attributes. Because of the limited area they occupy (approximately 0 .3% of our land surface}, the indigenous forests of South Africa are so important for man that every area should automatically be granted blanket conservation status. All these areas should be wisely managed for the short and long-term benefit of man.

The values of Nkandla Forest Complex include:

Table 2: Values of Nkandla Forest Complex

Natural values	▪ It's an area of unique natural beauty; ▪ The Nsuze River forms the southern boundary of the forest complex(Mndunduzeli Forest Complex); ▪ Nkandla Forest Complex and its surroundings has rich biodiversity and a number of key species including threatened, protected and endemic species; ▪ Important habitats present in the reserve include Eastern Scarp Forests: Ngome-Nkandla Scarp Forest, Midlands Mistbelt Grassland, Moist Coast Hinterland Grassland and the Eastern Valley Bushveld. ▪ The forest complex supports a population of Schreiber's long-fingered bat (*Miniopterus schreibersii*), Sclater's forest shrew (*Myosorex sclateri*) and Blue duiker (*Philantomba monticola bicolor*) and a number of other rare and threatened species. ▪ There have been sightings and presence of various bird species such as the Cape Parrot (*Poicephalus robustus*), Orange Ground-Thrush (*Zoothera gumeyi*), African Crowned Eagle (*Stephanoaetus coronatus*), Lanner falcon (*Falco biarmicus*) and the Martial eagle (*Polemaetus bellicosus*). ▪ The Nkandla Forest Reserve is home to a number of invertebrates that's endemic and restricted to KwaZulu-Natal and to some extent, to the Nkandla Forest Reserve itself. The Nkandla earthworm (*Tritogenia tetrata*), Nkandla balantine earthworm (*Udeina nkandla*), Discus pinwheel (*Trachycystis placenta*), Nkandla cicada (*Stagira nkandlhaensis*), Denticulate soil millipede (*Ulodesmus denticulatus*), Hooked-gonopod keeled millipede (*Gnomeskelus harpagonifer*), Rattray's black millipede (*Doratogonus rattrayi*), Margaret's forest wingless grasshopper (*Silvanidium margaretae*), Zulu small wingless grasshopper (*Silvanidiella amazulu*) are only found in the Nkandla Forest Reserve.
Ecosystem service values	▪ Forms a stepping stone for migratory birds linking natural land in an ecological network ▪ Important role in carbon sequestration ▪ Important role in gas and nutrient regulation ▪ Refugium function - living area for wild flora and fauna ▪ Ecotourism and educational value
Eco-tourism values	▪ Provides opportunities for eco-tourism ▪ The reserve is well known for its extensive bird life and is highly regarded by local bird enthusiasts. ▪ Hiking trails and scenic views.
Cultural and historic values	▪ It has always been an area of last retreat for the Zulu's, from King Shakas time to that of Bhambatha. ▪ Forest resources are used for housing, handcrafts, firewood and plant material for medicinal use.
Social values	▪ Provides both permanent and temporary job creation opportunities. ▪ Provides opportunities for environmental education and awareness. ▪ It is an area of tranquillity where locals can come to relax and view the natural biodiversity available.

	▪ The forest complex has great aesthetical value which is beneficial to all visitors to the reserve.

Consistent with Section 17 of the Protected Areas Act, the purpose of Nkandla Forest Complex is to:

- protect ecologically viable representative portions of Eastern Scarp Forests : Ngome-Nkandla Scarp Forest, Midlands Mistbelt Grassland, Moist Coast Hinterland Grassland and Eastern Valley Bushveld;
- preserve the ecological integrity of the area;
- conserve the important biodiversity in Nkandla Forest Complex;
- protect areas representative of ecosystems, habitats and species naturally occurring in Nkandla Forest Complex;
- protect Nkandla Forest Complex endangered and vulnerable species;
- assist in ensuring the sustained supply of environmental goods and services specifically relating to water provision;
- create or augment destinations for nature-based tourism;
- manage the interrelationship between natural environmental biodiversity, human settlement and economic development;
- To contribute to human, social, cultural, spiritual and economic development or to rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species.

1.5. Planning approach

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

1.5.1. Protecting and managing park ecosystems

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

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

Ecosystem management must be derived from a conceptual and strategic basis for the protection of park ecosystems which is based on sound research and monitoring. It must involves a holistic view of the natural environment to ensuring that all management decisions take into the consideration of 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 and 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.

1.5.2. Ecosystem-based management

Decision-making associated with the protection of park'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 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 be exemplary in the implementation of conservation and other environmental legislation including but not limited to environmental impact assessment and review.

1.5.3. Adaptive management

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

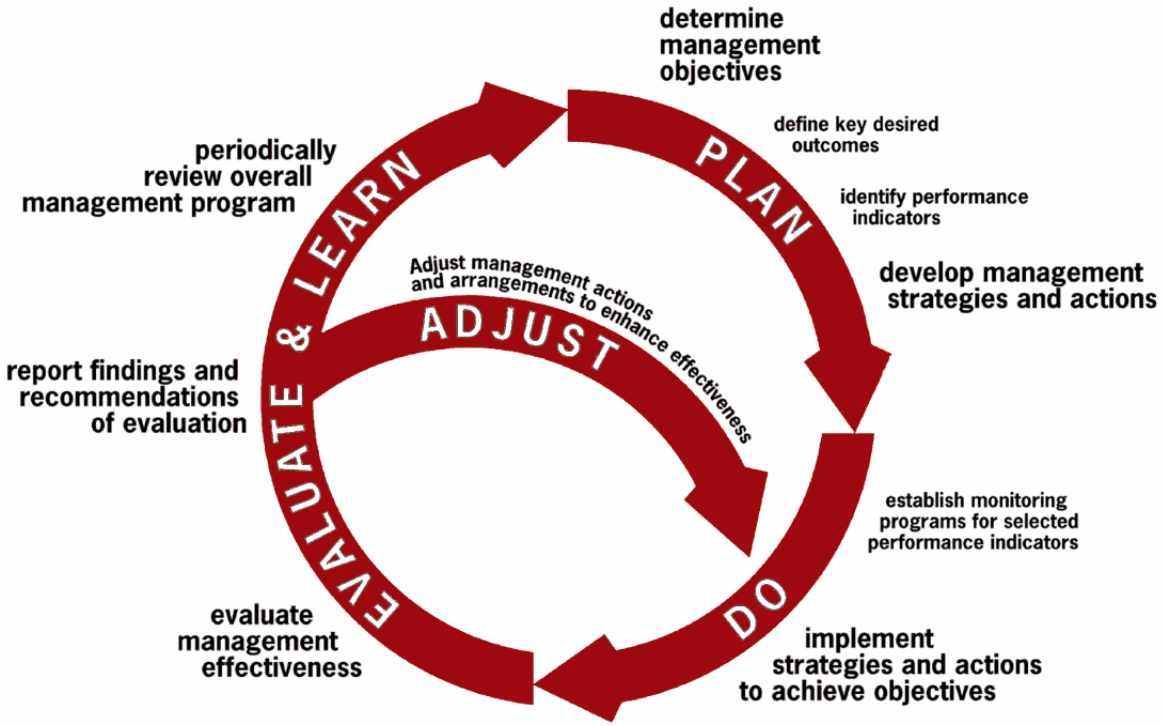


Figure 2: The adaptive management cycle

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.

1.5.4. Collaboration and transparency

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

Public consultation has been undertaken through a series of meetings and discussions with key stakeholders culminating in a key stakeholder workshop, held on the 19th of November 2014 at the Nkandla Community Hall. The discussions focussed on the purpose of management plans, the vision of the forest complex, the values of the forest complex and the ideas, issues, threats and opportunities. Furthermore, the draft management plan has been made available for public review and comment prior to its finalisation. This process has ensured a great deal of valuable input into the development of the management plan, the outcomes of which have been incorporated into it. A detailed public participation report is available upon request from the forest complex management.

2. DESCRIPTION OF NKANDLA FOREST COMPLEX AND ITS CONTEXT

2.1. Institutional and administrative framework for the management of Nkandla Forest Complex

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

Management of Nkandla Forest Complex 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 Nkandla Forest Complex to the designated KwaZulu-Natal Provincial Member of the Executive Committee (MEC) and the Premier thus ensuring coordination of those matters that may affect the forest complex through the relevant provincial departments, district and local municipalities.

2.2. The legislative basis for the management of Nkandla Forest Complex

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

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

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

2.2.1. Proclamation status of the Nkandla Forest Complex

The Nkandla Forest Reserve was established by Government Notice (G. N.) No. 318 of 1st March, 1918. It was re-proclaimed in terms of the KwaZulu Government Conservation Act in 1992 (37 of 1992) in the KwaZulu Government Gazette No. 32 of 1992.

A number of nearby forest were simultaneously re-proclaimed as "Nature Reserves."

The table below gives a summary of the proclamations for the reserves that form part of the Nkandla Forest Complex.

Name	Hectares	Proclaimed	Re-proclaimed	Government Notice
Nkandla Forest Reserve	2048	1st March 1918	26th May 1992	No. 37 of 1992
Mome Nature Reserve	766	30th April 1948	21st February 1992	No. 16 of 1992
Vungwini Nature Reserve	378	30th April 1948	21st February 1992	No. 19 of 1992
Sibudeni Nature Reserve	83	30th April 1948	21st February 1992	No. 17 of 1992
Dlabe Nature Reserve	138	30th April 1948	21st February 1992	No. 18 of 1992
Mndunduzeli Nature Reserve	333	30th April 1948	24th July 1992	No. 46 of 1992
Edodweni Nature Reserve	107	30th April 1948	24th July 1992	No. 45 of 1992

The complete list of proclamations can be found in Appendix C.

2.2.2. Public Trust Doctrine

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

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

2.2.3. Invasive species control in terms of the Biodiversity Act

In terms of Section 76 of the National Environmental Management: Biodiversity Act (No.10 of 2004), the management authority of a protected area must incorporate an invasive species control plan in the protected area management plan. This is addressed in Sections 3 and 4 below.

2.3. The policy framework guiding the management of Nkandla Forest Complex

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

- The White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity of 1997.
- The 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.
- Relevant norms and standards set by the Minister and MEC in terms of the Protected Areas and Biodiversity Acts.

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

VISION

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

MISSION STATEMENT

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

STRATEGIC OUTCOMES

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

CORE VALUES

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

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

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

In all of the sections of the management plan, where relevant, mention should be made of specific Ezemvelo KZN Wildlife policies that relate to the topic under discussion.

2.4. The regional and local planning context of Nkandla Forest Complex

The Nkandla Forest Complex falls within the Nkandla Local Municipality and the uThungulu District Municipality. The areas surrounding the forest reserve is quickly becoming transformed and a lot of pressure for development in the area since the home for the President of South Africa is situated nearby. The Integrated Development Plan (IDP) for the uThungulu District Municipality vaguely speaks about the forest complex.

2.4.1. The National Protected Area Expansion Strategy

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

In terms of the NPAES, areas around the northern boundary of Nkandla Forest Complex are identified as priorities for protected area expansion. The forest complex falls within Region 37 of the National Protected Area Expansion Strategy focus areas, the Thukela Focus Area in KwaZulu-Natal.

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

2.4.2. The Provincial Protected Area Expansion Plan

The KwaZulu-Natal Protected Area Expansion Plan (Ezemvelo KZN Wildlife 2010) also identified areas around the borders of NFC as priorities for protected area expansion and the forest complex forms a key hub in creating a connected protected area system in the region.

Certain areas around Nkandla Forest Complex 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 Nkandla Forest Complex either through land acquisition or through stewardship agreements, established with individual landowners or communities.

2.4.3. EIA Regulations in terms of NEMA

In terms of the National Environmental Management Act (No.107 of 1998) environmental impact assessment (EIA) Regulations, various activities require environmental authorisation before they may commence. In addition, in terms of Regulation RN.546, Listing Notice No.3, there are a number of activities that require environmental approval specifically as a result of their proximity to a protected area. The implication of this is that if any of the *activities listed in Appendix E* are proposed in the 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 forest complex or its buffer areas will thus also require environmental authorisation.

2.5. The history of Nkandla Forest Complex

2.5.1. Origins of the name of Nkandla Forest Complex

Nkandhla is derived from the verb “kandhla” meaning "to tire, exhaust or prostrate' and is applied collectively to the various great and more or less connected forests that clothe the mountains, spurs and valleys of this area.

Nkandla Forest is one of the traditional Forests of the Zulu people and one frequently used as a hiding place and refuge during unsettled periods of history.

2.5.2. History of conservation in Nkandla Forest Complex

The forest complex was originally managed and protected by the Department of Forestry, the complex was handed to the KwaZulu Department of Nature Conservation and re-proclaimed under the Government Notice No 37 of 1992.

2.6. Ecological context of Nkandla Forest Complex

2.6.1. Climate and weather

The climate of the Nkandla Forest Complex may be described as temperate subtropical. The NFC experiences the highest temperature during December and January with an average high of 27°C and the lowest temperature conditions are during the winter months of June and July at an average low of 2°C.

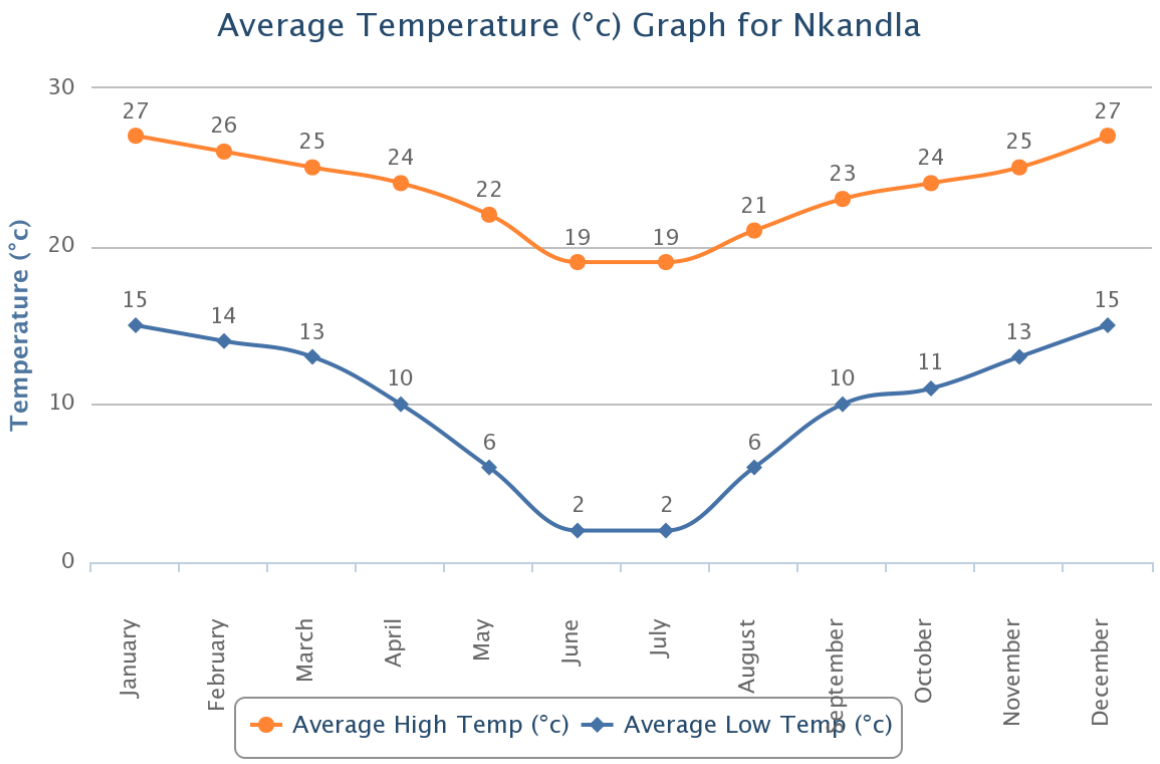


Figure 3: Average Temperature Graph for Nkandla Forest Complex

Nkandla Forest Complex receives 126mm of rain in January with an average of 17 rainfall days whilst the least amount of rain have been recorded in July with 15mm of precipitation with an average of 2 rainfall days.

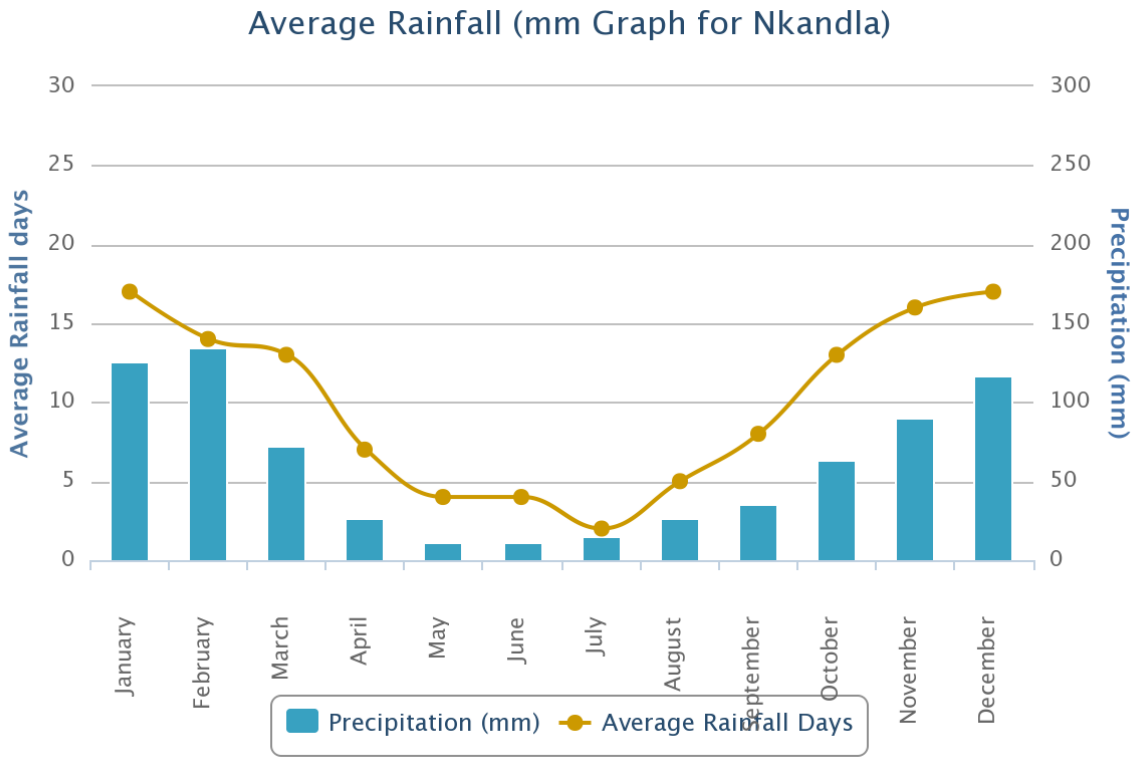


Figure 4: Average Rainfall Graph for Nkandla Forest Complex

The topography of the region is, generally, is steep, resulting in the drainage of cold air on calm nights into the valley region below. Because the nights are warmer, the inland upper altitudinal limit of the Coast Hinterland Region is at 1100 metres, and not at 1000 metres as suggested by the physiography. Nearer the coast at the Nkandla Forest Complex, the upper altitudinal limit may even be at 1300 metres, because of the strong oceanic influence on temperatures.

The prevailing winds during the summer, from December to February, are the North-East and South West winds. The south and South-West winds have the highest average velocity, bringing cool weather, low cloud to the coast area. The south-east and east winds are moist, frequently bringing low cloud and mist to the Coast Hinterland. South-west winds commonly herald frontal rains.

From March to May, the transition from summer to winter, the frequency of the winds decreases. Over the interior, hot, dry Berg winds during autumn mark the onset of the dry season and the deciduous character of various trees and shrubs become evident.

May, June and July are generally the calmest months of the year. Westerly winds begin to increase in frequency over the interior. From August to November is the season of windy weather. On the coast, north-east winds increase in frequency; Spring being the worst season for gales, which may blow for several days. Most important are the hot, dry, north-west or Berg winds, especially frequent during August and September at the end of the dry season, when -the fire hazard is especially great in the dry grasslands.

Very significant for plants, at the commencement of the spring growing season, is the low humidity of the berg winds. The slopes principally affected by the Berg winds are the north to north-west facing slopes, with these slopes being also to leeward of the rain-bearing winds, as well as receiving the greatest amount of insolation throughout the year. In contrast, to the North facing slopes, South aspects on high hills and escarpments are exposed to moisten laden winds, and receive considerably less insolation. On the exposed upper margin of the Forest, wind effects are apparent, but most of the Forest is protected from the Berg winds.

On the steep topography, cold air is able to drain away into the valley at night, with only light frosts occurring in the forest area.

2.6.2. Topography

The forest extends from 762 - 1219 meters on steeply undulating country with a predominately south aspect, but in which north aspects are also frequent.

2.6.3. Geology and soils

The following has been extracted from an article by Groenewald (1984), “The Lithostratigraphy and petrogenesis of the Nsuze Group, northwest of Nkandla, Natal.”

General

The region is underlain by very ancient rock formations, most of which have been deformed and altered by the effects of pressure and temperature (referred to a metamorphism) resulting from large scale movements of the Earth's crust over extensive periods of time (millions of years). The topography of the region is generally rugged, with most rock outcrops in this highly vegetated area being exposed in deeply-incised valleys, some hillsides and several road cuttings.

Stratigraphy

The geology of the region is very complex, owing to the history of deformation and metamorphism of the original geological successions, and later intrusions into these rocks of hot molten (magma) from below to produce the granitic exposures southeast of Nkandla. Difficulties in description, interpretation and the use of up-to-date litho-stratigraphic nomenclature has resulted from revised concepts introduced by years of research in the area first geologically mapped in remarkable detail by Dr Alex L. du To it of the Geological Survey in the early 1930's Basically, the area lies at the approximate boundary between the ancient (older than 3000 million years) granitoid-greenstone Kaapvaal Craton "basement'', and the relatively younger (1000 million years) Natal Metamorphic Belt to the south. A major east-west structural feature, referred to as the Natal Thrust Front occurs along the "boundary". It is postulated that some 1000 million years ago volcanic and sedimentary rocks of an adjoining ocean floor were pushed up against, and squeezed, by enormous forces against the stable granitoid craton (or continental mass). As simple comparison one may look at the present day Himalaya Mountains, the rocks of which represent former ocean-floor material, resulting from the squeezing of a former Mediterranean-type sea between India, migrating northwards, and colliding with the Siberian shield. In such a process the sea-floor sedimentary

deposits would have been considerably folded, and also altered by the effects of heat and pressure.

These major crustal processes are related to the modern theory of plate tectonics whereby a number of huge global plates forming the outer solid parts of planet Earth slide or move horizontally. Earthquake and volcanic activity results from these lateral movements where rigid bodies interact with each other at their respective boundaries. Mountains may be formed by the compression of layers of rock along and between approaching plates, while deep cracks or trenches may develop where plates move away from each other.

Basement complex comprises the oldest, craton rocks of the Nkandla Forest region and is represented by the metamorphosed "greenstone" rocks of the Nondweni Group and the associated granitoids comprising several types of granite and granite gneiss. Originally the Nondweni rocks were volcanic and sedimentary deposits, formed about 3 500 million years ago. They are thus amongst the oldest rocks on planet Earth whose age is believed to be 4 500 million years. Today the exposures of the Nondweni Group indicate that in time these rocks have been considerably deformed and metamorphosed. In the Nkandla Forest Reserve, about 50 km from Eshowe, several road cuttings show vertically-dipping phyllites and small ridges of sheared quartzite, and sericite-quartz schists of the Nondweni Group. Phyllites and schists are typical, fine-grained foliated metamorphic rocks.

At Isisusa Hill (altitude about 1340 m), immediately north of the Nkandla Forest Reserve, the Nondweni Group rocks are seen as steep, southerly-dipping quartzites and sericite schists with thin, dark grey to black chert-like layers and lenses. This group of resistant quartzitic rocks build the high Nomanci ridge which extends for many kilometres to the east and west. The country to the north is extensively underlain by granite which intrudes the Nomanci quartzite. Along the transgressive contact the quartzites have been metamorphosed by the heat of the intrusion to silvery muscovite schists and structureless quartz-kyanite rock, with large blades of kyanite. (Kyanite is a pale blue aluminium silicate mineral and is of economic importance, as indicated by past kyanite prospecting activities south of Nkandla).

The granite has an age of about 3 100 million years. The outcrops of this pink to light grey coarse-grained plutonic rock are extensively exposed east and southeast of Nkandla. The Pongola Supergroup south of Nkandla is represented by the 2 900 million-year old folded sedimentary and volcanic rocks of the Nsuze Group. They are exposed along the northern part of the Nkandla Forest Reserve and attain a total thickness of 2 - 4 000 m. The sedimentary rocks, represented by quartzite, shale and pebble conglomerate were originally deposited by rivers and along marginal marine environments which included tidal flats. Northeast of Nkandla, in the Mhlatuze river valley, there are numerous prospecting pits and evidence of former gold mining activity along the conglomerate exposures.

The Natal metamorphic belt (also referred to as the Natal metamorphic province). South of the Natal Thrust Front these complexly metamorphosed rocks extend south to the border of the former Transkei. In the region between Pietermaritzburg and Durban, in the deeply-incised Umgeni River valley, for example, they are represented by granite gneiss, amphibolite, migmatite etc. About 35 km from Eshowe, via Ntumeni, the Natal metamorphic belt is represented by hornblende schists and banded gneisses extending over an extensive region. Deformation ha5 produced the typical folded structures seen in these rocks The road in this

area, originally constructed by the Royal Engineers during early colonial times, follows the sharp divide between the Tugela drainage to the southwest, and the Umhlatuzi drainage to the northeast. Exposures of the gneiss can be seen along the roadside. Along the Natal Thrust Front, about 42 km from Eshowe, the Tugela fault separates the granite-gneiss to the south from steep, southward-dipping chloritic schists with bands of ironstone. This was formerly known as the "Mfongozi Series". Further towards Nkandla, road cuttings reveal deeply-weathered schists and phyllites. On the Isibuta hill (1200 m altitude), northeast of the road, ironstones of the "Mfongozi Series" dipping southwards, are indicative of the major thrust northwards against the stable granitoid Kaapvaal craton.

The Tugela fault, referred to above, is a major east-west fracture zone extending across KwaZulu-Natal, following the approximate course of the Tugela River, where one block of the Earth's crust has been vertically displaced relative to the other. In this case the downthrow ('drop') is to the south. About 3 0 km from Eshowe, near the Fort Yolland store, thin seams of asbestos occur in old opencast workings in gneissic rocks.

Natal Group sedimentary rocks are primarily represented by flat-lying, undeformed beds of quartzitic sandstone, with subordinate conglomerate. These sedimentary deposits were formed some 490 million years ago by rivers flowing southward in a very rugged landscape comprising the ancient and dissected rock formations described above. Sporadic exposures of the Natal Group occur to the north and west of the Nkandla Forest Reserve. In the Vumandhlavu valley, for example the Natal Group sedimentary deposits are exposed along the road. The difference in elevation (370 m above sea level) between these exposures and the crest of the Nomanci ridge above, comprising the very much older rock, gives an indication of the ruggedness of the topography at the time of deposition of the fluvial Natal Group sediments nearly 500 million years ago.

The prominent tabular Nkomo mountain (just over 1000 m above sea level) about 40 km from Eshowe, immediately to the west of the road on the way to the Nkandla Forest Reserve, forms an isolated exposure of the Natal Group. A coarse basal conglomerate at the base of the mountain rests with a sharp contact on the steeply-dipping gneiss of the relatively older Natal metamorphic belt. Upward the conglomerate is followed by alternating sandstones and maroon-coloured shales. The dissected east-west fault line scarp of the Tugela fault can be seen to the north and northwest from the top of the Nkomo hill.

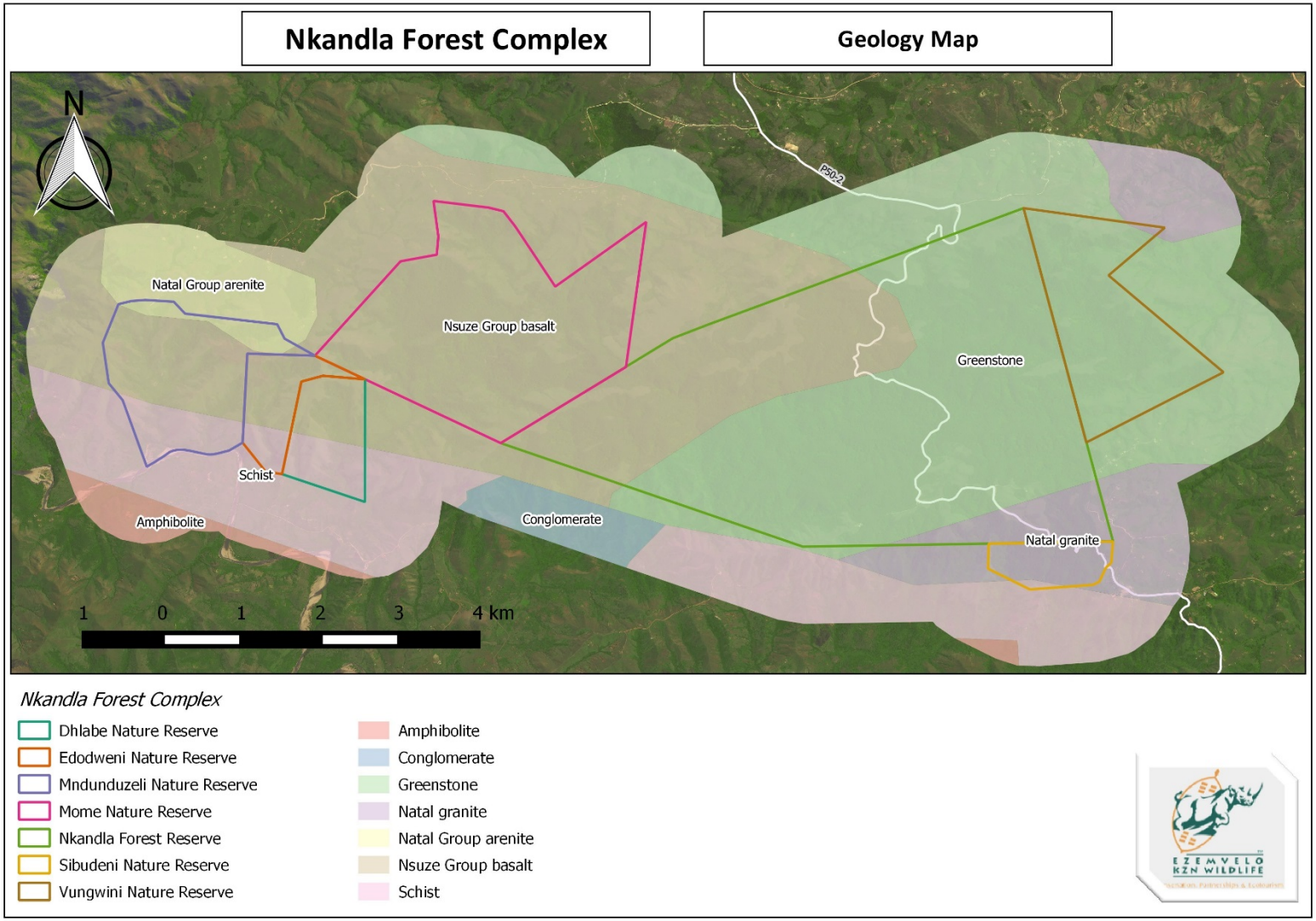
Dwyka Group sedimentary deposits are about 200 million years younger than those of the Natal Group, and form the basal unit of the Karoo Supergroup. They are thus the youngest rock-types in the area. The Dwyka Group is represented by diamictite, originally deposited on the sea floor during an extensive continental glaciation (ice age). There are only few exposures of the Dwyka Group in the area to be visited. Some diamictite is exposed in the vicinity of the Nkandla village.

Faults are fractures zones in the Earth's crust along which vertical or sub vertical displacements have occurred. The Tugela fault which extends in an east-west direction across KwaZulu-Natal, and which follows the approximate course of the Tugela River is an example of large-scale displacement, where the block to the south was displaced downwards relative to the northern block. To the north and northwest of the Nkomo Mountain, the downthrow on the southern side is between 250 and 460 metres. Erosion of this fracture has produced

the dissected eastwest fault-line scarp which closely follows the trend of the Natal Thrust Front.

The Tugela fault is a younger tectonic (structural) crustal feature and indications are that the fracturing occurred after deposition of the Karoo Supergroup, which includes the basal Dwyka Group. The northeast-trending Ntumeni fault (22 km from Eshowe) forms the eastern limit of an extensive down-faulted block of the Natal Group in the region around Eshowe. The position of the fault is shown by a line of hills formed by resistant rock, and quartz reefs. At this locality the minimum estimated easterly down throw on the fault is 450 m.

See Map B - Geology of Nkandla Forest Complex.

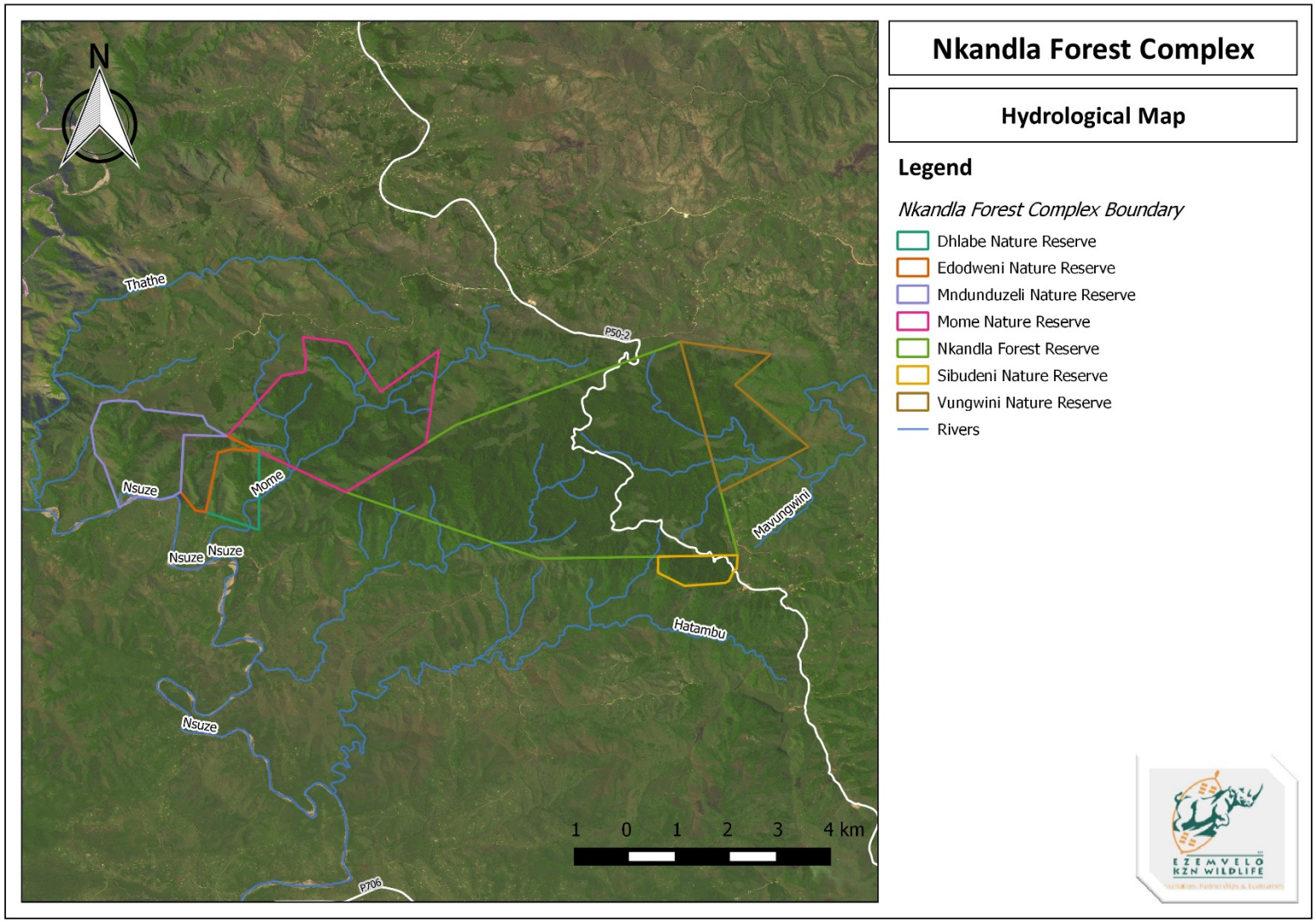


Map B: Geology of Nkandla Forest Complex

2.6.4. Hydrology

The obtaining of a high quality, pure, and perennial source of water from the Nkandla catchment area is of major importance for agricultural, industrial and domestic use. The Nkandla Forest Complex forms an important catchment area for pure, unpolluted water, and drainage within the forest complex boundaries is mainly in two directions. In the area to the west of the provincial road (P-50), passing through the Reserve, the drainage takes place in a southerly direction, and to the east of the road the flow of water is in an easterly direction, which gives origin to the Mavungwini River. The Mome Forest Nature Reserve catchment forms the origin of the Mome River which is also an important source of pure water. With most of the reserve covered by forest, there are no serious erosion problems - though heavy rains in recent years have given rise to some slippages - but an increase in the number of cattle on the grassland patches could cause more serious erosion problems.

See Map C - Hydrology of Nkandla Forest Complex.



Map C: Hydrology of Nkandla Forest Complex

2.6.5. Vegetation

The Nkandla Forest Reserve is described as semi-coast forest, and is known to be the best representative of this type. Other representatives of this type are the Qudeni Forest, and a number of impoverished remnants in the remaining areas of the Coast Hinterland Region. Because the Nkandla Forest occurs towards the upper distributional limits of the association, it shows features transitional to Mistbelt Podocarpus Forest, which includes most of the Qudeni Forest.

Within the Reserve boundaries, approximately 1770 hectares (85%) is covered with Semi-coast Forest and the remaining 310 hectares is covered by a number of *Themeda triandra* and secondary *Aristida junciformis* grassland patches, varying in size from about a quarter to several hectares in extent.

The total area of forest extending beyond the Nkandla Forest Reserve boundaries is 829 hectares, of which 550 hectares is part of the Mome Nature Reserve. The total forest area beyond the boundaries, formed of a number of other proclaimed areas, expressed as a percentage of the total forested area is 31%. The tallest trees in the Semi-coast forest, emergent from the continuous upper canopy, are generally from 16 to 22 metres high. On deep soils and in kloofs they may be over 30 metres high, whereas on rocky ridges, common in the Nkandla Forest Reserve, the tallest may only average 13 to 17 metres. The average diameter at breast height is from 40 to 90 cm, but several specimens with diameters between 1 and 2 metres have been found.

The Nkandla Forest Complex has been classified into the following vegetation types according to the KZN Vegetation Map 2011:

- Scarp Forest - Eastern Scarp Forests : Ngome-Nkandla Scarp Forest (Subset)
- Midlands Mistbelt Grassland
- Moist Coast Hinterland Grassland
- Eastern Valley Bushveld

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

- **Scarp Forest**

Distribution:

This vegetation type ranges betweeen Eastern Cape, KwaZulu-Natal and Mpumalanga Provinces as well as in Swaziland (and possibly also in Mozambique): An archipelago of scattered patches (some of them large, such as Ongoye) spanning southern Mpumalanga (Crocodile River Gorge), the southern part of Lebombo Mountains (KwaZulu-Natal) and reaching nearly as far as Kei River Mouth on the Transkei coast. Patches of this forest lie as far as 140 km inland (Mpumalanga), but extend increasingly closer to the sea in a southward direction—in Pondoland, and southern Transkei they occur at the coast or in deep gorges,

often associated with krantzes, scarps and coastal platforms. Most of the patches occur at low altitudes between 50 and 600 m.

Vegetation and Landscape features:

Vegetation found within this vegetation type is typically tall (15 – 25 m), species-rich and structurally diverse, multi-layered forests, with well-developed canopy and understory tree layers, but a poorly developed herb layer. Buttressed stems are common in the Scarp Forest. The most conspicuous trees are *Buxus macowanii, B. natalensis, Drypetes gerrardii, Englerophytum natalense, Harpephyllum caffrum, Heywoodia lucens, Memecylon natalense, Millettia grandis, Oricia bachmannii, Philenoptera sutherlandii, Rinorea angustifolia, Rothmannia globosa* and *Umtiza listeriana.*

There are five subtypes:

- Eastern Scarp Forests : Ngome-Nkandla Scarp Forest
- Eastern Scarp Forests : Northern Coastal Scarp Forest
- Eastern Scarp Forests : Northern Zululand Lebombo Scarp Forest
- Eastern Scarp Forests: Southern Coastal Scarp Forest
- Pondoland Scarp Forests

- **Midlands Mistbelt Grassland**

Distribution:

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

Vegetation and Landscape features:

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

- **Moist Coast Hinterland Grassland**

Distribution:

This vegetation type is distributed along KwaZulu-Natal and Eastern Cape Provinces: From near Melmoth in the north to near Libode in the south (including Eshowe, New Hanover,

Thornville, Richmond, Harding, and Lusikisiki). It generally occurs below the Midlands Mistbelt Grassland. It occurs between an altitude of 450 - 900 m.

Vegetation and Landscape Features:

It is characterised by rolling and hilly landscapes. Dense tall sour grassland is dominated by unpalatable Ngongoni grass (*Aristida junciformis*) as this mono-dominance is associated with low species diversity. When this vegetation is in good condition, it is dominated by *Themeda triandra* and *Tristachya leucothrix*.

Geology & Soils:

This vegetation type is found within acid leached heavy soils which are derived from Karoo Supergroup sediments (including significant Dwyka tillites) and intrusive Karoo dolerites. Shallow sandy soils are derived from Natal Group Sandstone.

Climate:

This vegetation type is associated with summer rainfall with some rain in winter. The mean annual precipitation is about 800 to 1160 mm with Frost occurring infrequently.

- **Eastern Valley Bushveld**

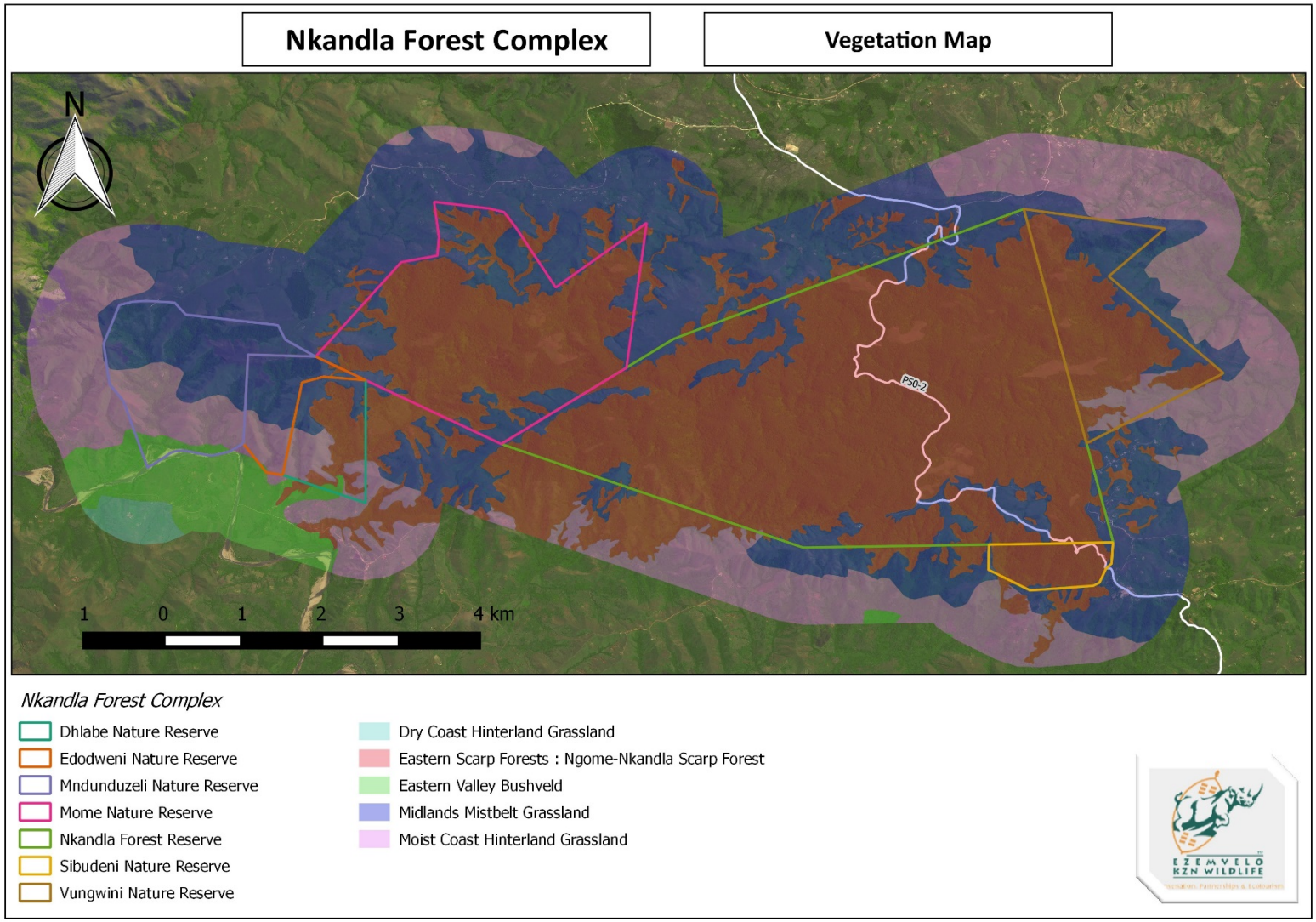
Distribution:

It is distributed along KwaZulu-Natal and Eastern Cape Provinces: within deeply incised valleys of rivers including the lower reaches of the Thukela, Mvoti, Mgeni, Mlazi, Mkhomazi, Mzimkulu, Mzimkulwana, Mtamvuna, Mtentu, Msikaba, Mzimvubu (and its several tributaries), Mthatha, Mbhashe, Shixini, Qhorha and Great Kei. This vegetation type very seldom extends to the coast. It occurs within an altitude of 100–1 000 m.

Vegetation and Landscape features:

The landscape consists of semi deciduous savanna woodlands in a mosaic with thickets, often succulent and dominated by species of *Euphorbia* and *Aloe.* Most of the river valleys run along a northwest-southeast axis which results in unequal distribution of rainfall on respective north-facing and south-facing slopes since the rain-bearing winds blow from the south. The steep north-facing slopes are sheltered from the rain and also receive greater amounts of insulation adding to xerophilous conditions on these slopes.

See Map D - Vegetation of Nkandla Forest Complex.



Map D: Vegetation of Nkandla Forest Complex

2.6.6. Fire regime

Fire management is undertaken by staff with budget taken from the Nkandla Forest Complex and focuses on burning fire breaks to prevent wildfires from damaging the forest margins. The Karkloof Butterfly Research Site which lies just outside of Nkandla Forest Reserve and the provincial road (P50) also requires a firebreak along the boundary. Firebreaks are burnt strategically every year which amounts to close to 50km. Burning is only done at Nkandla Forest Reserve and a bi-annual burning programme has been adopted by management. Arson fires are a major threat around the forest complex and have caused forest to be damaged in the past.

2.6.7. Invasive species

A report compiled by W. P. Mhlongo (1991) indicates that the Nkandla Forest Complex does experience problems with alien invasive plants.

Bugweed (*Solanum mauritianum*) is the most widespread alien plant in the Nkandla Forest Reserve but is more common to the west of the forest reserve. The report also made mention that Pine trees (Pinus spp.), Wattle trees (Acacia spp.), Bramble berry (*Rubus cuneifolius*) occurs to the north east of the forest reserve and Gum trees (Eucalyptus spp.) and *Lantana camara* occurs more to the south east section.

A high level of Mauritius thorn (*Caesalpinia decapetala*), American bramble (*Rubus cuneifolius*) and Black wattle (*Acacia mearnsii*) have established itself within the Nkandla Forest Reserve.

High levels of Madera vine (*Anredera cordifolia*), Australian blackwood (*Acacia melanoxylon*) and Indian shot (*Canna indica*) have been recorded on the outskirts of Sibudeni Nature Reserve. Madera vine (*Anredera cordifolia*) is a highly invasive weed and is capable of smothering and destroying indigenous vegetation. The climbing stems envelope the canopy layer while it's trailing stems smoother plants lower to the ground. The web of stems cuts of the penetration of light and plants underneath, die as a result.

The Australian blackwood (*Acacia melanoxylon*) is a major invader of forest and a serious threat to grassland areas. It is known to transform grassland communities by replacing the indigenous non-tree vegetation. These trees have high growth rates and vigourous regrowth rates from root suckers and seed regeneration which makes it difficult to control. The seeds are spread by animals, particularly birds.

The Indian shot (*Canna indica*) originates from the Caribbean region and tropical America, and occurs in scattered localities in Kwazulu-Natal. This plant forms dense spreading clumps and competes with and replaces indigenous species.

See Appendix I, Priority alien plant species to be eradicated at Nkandla Forest Reserve.

An updated list of invasive species should be compiled and form part of the alien invasive management plan.

2.6.8. Mammalian fauna

Mammalian fauna present in the Nkandla Forest Reserve includes the following Schreiber's long-fingered bat (*Miniopterus schreibersii*) which is listed as Near Threatened according to the Red List of South Africa, Sclater's forest shrew (*Myosorex sclateri*) which is listed as Endangered and the Blue duiker (*Philantomba monticola bicolor*) which is listed as Vulnerable.

There have been sightings of Leopard (*Panthera pardus*), Caracal (*Felis caracal*) and Honey Badgers (*Mellivora capensis*) through trap cameras placed around the Nkandla Forest Reserve.

There are no entries in the EKZNW Database for the remaining forest reserves that makes up the Nkandla Forest Complex and a full mammalian fauna inventory list should be populated and fed back into the EKZNW Biodiversity Database.

For a complete list of mammalian fauna, see Appendix F.

2.6.9. Avifauna

The EKZNW database list the Lanner falcon (*Falco biarmicus*), Bush blackcap (*Lioptilus nigricapillus*), African Broadbill (*Smithornis capensis*), African Crowned Eagle (Stephanoaetus coronatus) and the Orange Ground-Thrush (*Zoothera gurneyi*) as near threatened according to the Red List of South Africa for Nkandla Forest Reserve. The Nkandla Forest Complex is home to 108 different species of birds which makes it a popular birding destination in the area.

There are no entries in the EKZNW Database for the remaining forest reserves that makes up the Nkandla Forest Complex and a full avifauna inventory list should be prepared and fed back into the EKZNW Biodiversity Database.

For a complete list of avifauna, see Appendix F.

2.6.10. Herpetofauna (reptiles and amphibians)

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

Nkandla Forest Reserve is home to the Qudeni dwarf chameleon (*Bradypodion nemorale*) which is listed as Near Threatened by the IUCN, Natal Chirping Frog (*Anhydrophryne hewitti*), Bush Squeaker (*Arthroleptis wahlbergii*) and the Natal Cascade Frog (*Hadromophryne natalensis*) which is listed as least concern on the Red List of Southern Africa.

The Spotted Bush Snake (*Philothamnus semivariegatus*) and the black-headed centipede eater (*Aparallactus capensis*) can also be found in the Nkandla Forest Reserve.

There are no entries in the EKZNW Database for the remaining forest reserves that makes up the Nkandla Forest Complex and a full herpetofauna inventory list should be populated and fed back into the EKZNW Biodiversity Database.

For a complete list of herpetofauna, see Appendix F.

2.6.11. 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.

The Discus pinwheel (*Trachycystis placenta*) is critically endangered and the Haygarths pinwheel (*Trachycystis haygarthi*) is endangered as listed by the IUCN and both invertebrates are restricted to only KwaZulu-Natal. The Nkandla Forest Reserve is home to three rare butterflies as listed by the Red List of Southern Africa, namely the Bicoloured Skipper (*Abantis bicolor*), Albatross White (*Appias sabina phoebe*) and the Karkloof Blue (*Orachrysops ariadne*).

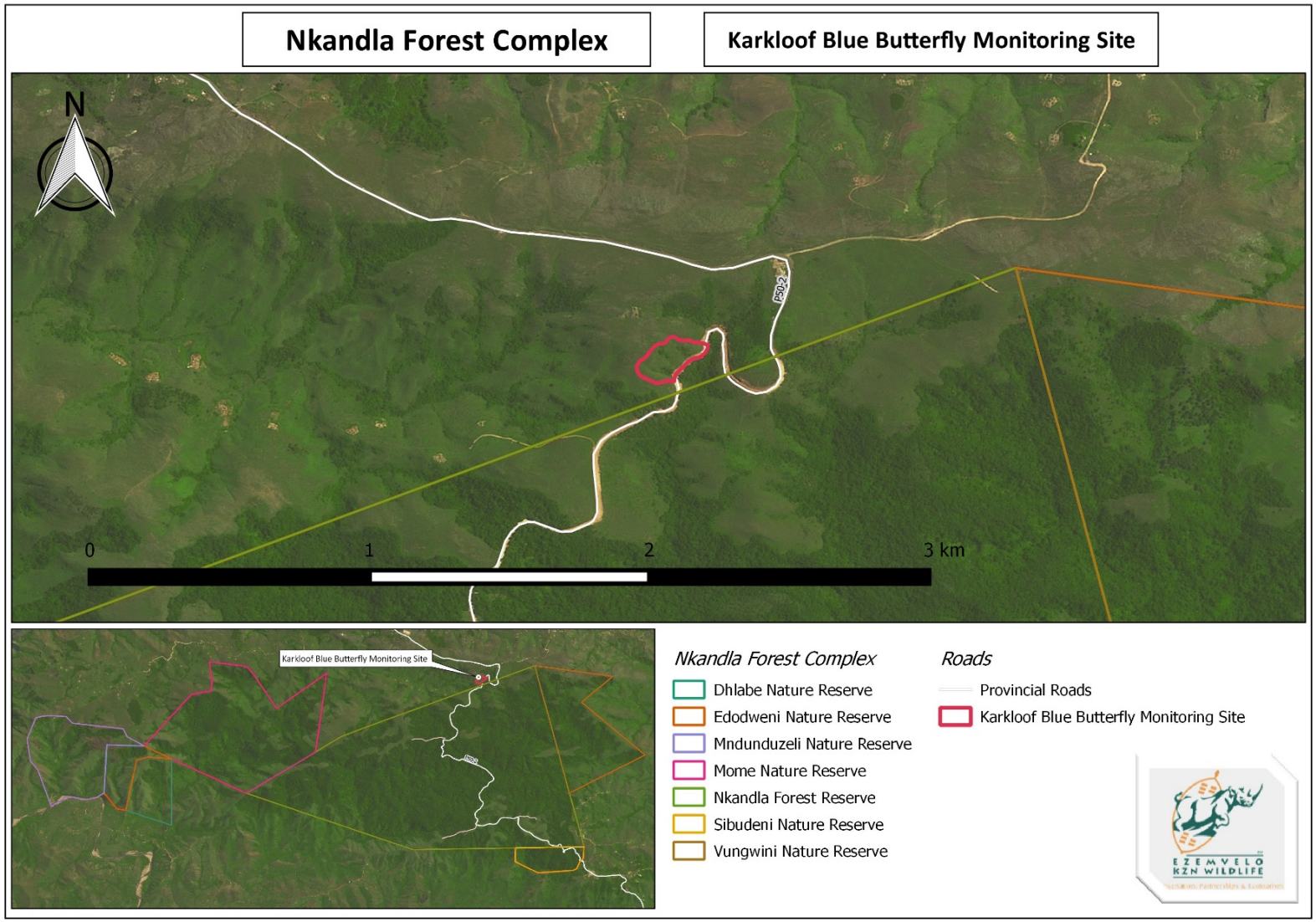
The Karkloof Blue Butterfly (*Orachrysops ariadne*) is a small, blue butterfly which is classified as Vulnerable and only five colonies of this species have ever been recorded, one of which no longer exist presumably because its habitat has been transformed by alien plants. The butterfly only occurs in the Moist Midlands Mistbelt and is not known to be found in any protected area managed by Ezemvelo KZN Wildlife. However on the northern boundary of the Nkandla Forest Reserve, A well-developed colony exist and good management of this population is imperative because of the fact that it is a relatively large colony and the surrounding landscape is not transformed in comparison with other known sites.

See *Appendix K* for the Management Guidelines on the Karkloof Blue Butterfly (*Orachrysops ariadne*) colony adjacent to the Nkandla Forest Reserve.

See Map E: Karkloof Blue Butterfly Monitoring Site.

There are no entries in the EKZNW Database for the remaining forest reserves that makes up the Nkandla Forest Complex and a full herpetofauna inventory list should be populated and fed back into the EKZNW Biodiversity Database.

For a complete list of invertebrates, see Appendix F.



Map E: Karkloof Blue Butterfly Monitoring Site

2.7. Cultural context of Nkandla Forest Complex

The NFC is rich in cultural resources, and include:

- Stories, myths and legends with particular reference to the early history of the Zulu kingdom;
- Late Iron Age sites in the immediate surroundings of the forest complex;
- The forest its self has living heritage values and features in the myths and legends of the surrounding communities.

The history of the area has been well documented and can be found in Appendix J.

2.8. Socio-economic context

The Nkandla Forest complex falls within the Nkandla Local Municipality which was established in the year 2000 and administered under the uThungulu District municipality.

The population of the local municipality has shown a steady decrease over the years with a population of 114416 people with majority of the population belonging to the zero to four year old age category and the least amount in the over 85 category.

While KZN is the 4th poorest province in South Africa, rural municipalities like Nkandla suffer from further income inequality. There are very few local opportunities for employment. Women outnumber men, who have migrated out of the area in search of work in Richards Bay and Durban. The average income earned by Nkandla workers is R400-R800 per month compared with R800-R1600 per month earned by employed people across the province.

The skills level at Nkandla is relatively low. The proportion of people over the age of 20 years with no schooling is double the provincial average. The proportion of people with secondary levels, matric and tertiary education is about half those achieved in the province. This also indicates that there is substantial leakage of people with managerial, business and technical skills to the cities.

As a result of the low skills base, Nkandla has a particularly high proportion of people seeking work in comparison to those who are actually employed. There is a sense of hopelessness about obtaining work – the number of people in the 15-64 year age group who are not actively seeking employment is very high in comparison with the provincial and national figures. Unemployment will impact on crime levels, creating unfavourable conditions for further business investments in the area.

The end result of these inequalities is reflected in household incomes. The average annual household income is R4800 to R9600 at Nkandla compared with R19200 to R38400 in the EThekwini Metro. More than 80% of households at Nkandla are living below the poverty datum line compared with a national average of about 50%. Households survive through adopting a key strategy – that is to obtain income from a diversification of sources.

There are internal inequalities within Nkandla with indications of extreme poverty in certain area (e.g. the southern regions). These areas are also poorly serviced in terms of protected

water. However health and education facilities appear to be fairly evenly spread - although, the available. Tensions between traditional authorities exist as a result.

2.9. Operational management within Nkandla Forest Complex

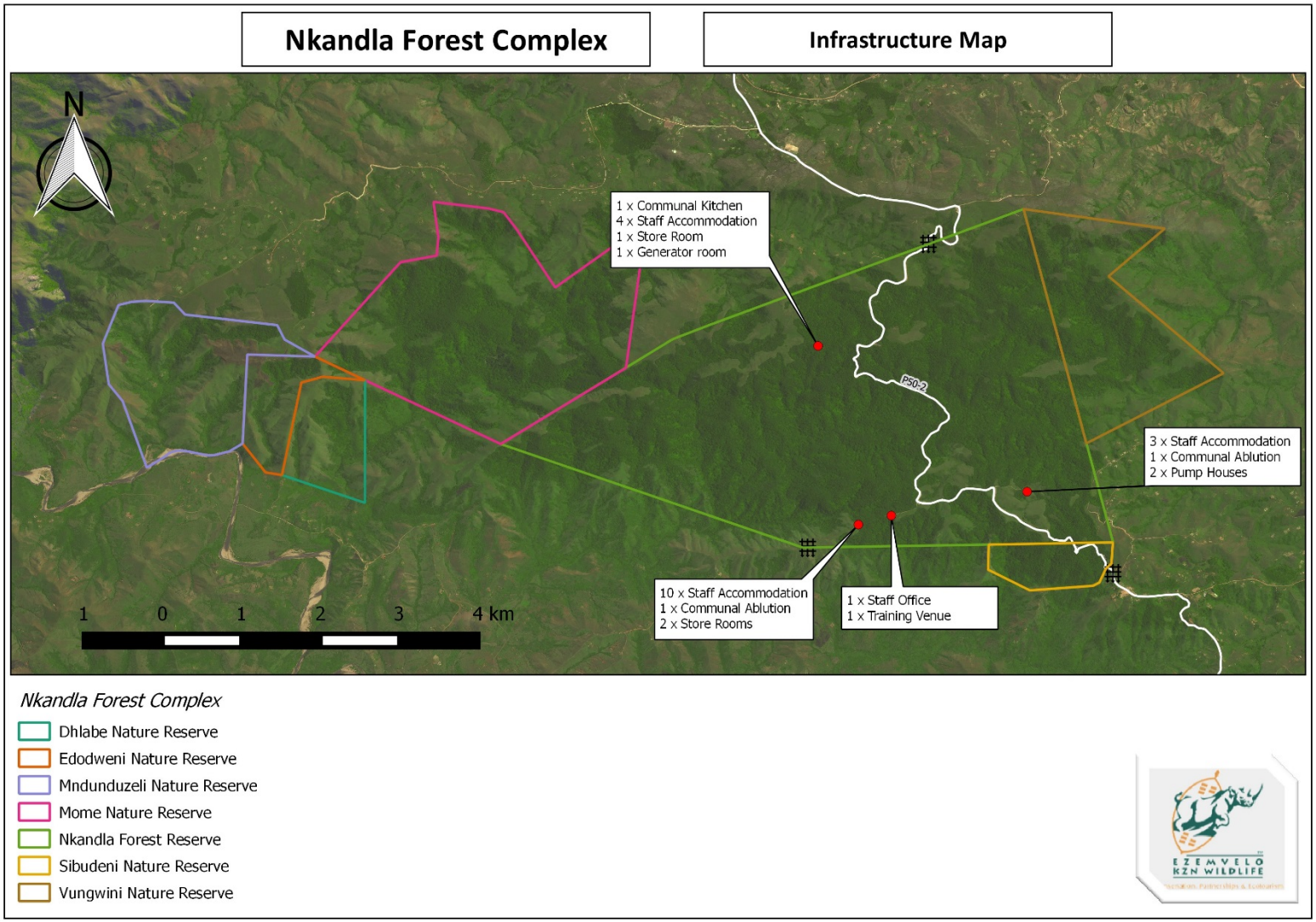
2.9.1. Infrastructure

- Management Infrastructure:
  - 17 x Staff Accommodation
  - 2 x Communal Ablutions
  - 1 x Training Venue (Educational Centre)
  - 1 x Staff Office
  - 3 x Store Rooms
  - 1 x Communal Kitchen
  - 2 x Pump Houses
  - 1 x Generator Room
  - 10 x Gates:
    - 2 at Bhobhe
    - 3 at Esibhudeni (including the main road)
    - 3 at Nomangci (including the main road)
    - 2 at Ezigqileni
- Bulk Infrastructure:
  - 50 Km Boundary fence around Nkandla Forest Reserve Only
  - 4.3 Km Internal management tracks
  - 1.08 Km Fencing around camps (Mdonini, Chibini, Mahlsiyana)
- Eco-tourism Infrastructure:
  - 7 x Picnic sites:
    - 5 Along the P-50 Provincial road – Nkandla 20
    - 1 at the Karkloof Blue Butterfly site
    - 1 in the Park
  - Walking trails:

- Echibini Camp:
    - Nomangci – 3 Kilometres
    - EZigqileni – 1.3 Kilometres
    - Nothusi – 300 metres
    - Enhlabeni – 1.5 Kilometres
    - EMabaleni – 10 Kilometres
    - KuMaphuzwane – 500 metres
    - Kweside – 8 Kilometres
    - EMchachazweni – 800 metres
    - KwaManziphambana – 9 Kilometres
    - KwaNgqimingqimi – 11 Kilometres
- Mdonini Camp:
    - Bhobhe – 800 metres
    - Mahlasiyane – 3 Kilometres
    - Ezikhoveni – 1.7 Kilometres
    - Ocheni – 1.3 Kilometres
    - KwaMajozi – 1 Kilometre
    - Sununundu – 1.5 Kilometres
    - Manziphambana – 4 Kilometres
    - Bhoyiza – 2 Kilometres

All infrastructure needs to be mapped and collated in an infrastructure maintenance plan.

See Map F - Infrastructure of Nkandla Forest Complex.



Map F: Infrastructure of Nkandla Forest Complex

2.9.2. Staffing establishment

There are currently 14 permanent staff members (Three vacant positions) divided as follows:

- 1 x Officer in Charge
- 1 x Administrative Clerk
- 8 x Senior Field Rangers
- 4 x General Assistants

The staff members based at the Nkandla Forest Reserve are also responsible for the management of the Nkandla Forest Complex that includes the remaining forest reserves that makes up the forest complex.

The following positons are currently (2015) vacant:

- 1 x Principle Field Ranger
- 1 x Senior Field Ranger
- 1 x General Assistant

2.9.3. Funding levels at Nkandla Forest Complex

The management effectiveness assessment conducted by Carbutt and Goodman in 2010 indicated the funding levels at the Nkandla Forest Reserve to have an operational budget of R127,42 per hectare and a total budget of R 282 360.00.

The Nkandla Forest Reserve now operates on an annual budget of R 316 686.00, which would push the Rand per hectare value up to R 142.90 per hectare. The Nkandla Forest received a further R 122 665.00 for projects.

The total budget for the Nkandla Forest Reserve is used on the remaining reserves of the Nkandla Forest Complex. The Forest complex does not receive any additional funding.

2.9.4. Management effectiveness in Nkandla Forest Complex

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

Management effectiveness assessments generally consider four areas: PA design, delivery of PA objectives, the appropriateness of management systems and processes and ecological integrity (Carbutt & Goodman 2010). The outcomes of these assessments are intended to enable conservation organisations to enhance their conservation strategies, re-allocate budget expenditures where necessary, and develop strategic, system-wide responses to the most pervasive threats and management weaknesses (Carbutt and Goodman 2010). They are not individual performance assessments but instead are conducted to reflect an organization's proficiency for PA management as a whole. The minimum required score for a PA is to 67% to follow national standards.

The 2010 results revealed NFC to have a management effective score of 50%, placing NFR in the 49-50% category whilst most of the reserves scored between 51-60%.

The 2013 management effectiveness assessment took place on the 27th February 2013. The reserve scored 66.88% which shows an improvement from 2010 score of 50%.

The 2014 management effectiveness assessment took place on the 25th February 2014. The reserve scored 66.24% which shows a slight decline from the 2013 score. This was due to a drop in the following items:

- Cultural heritage knowledge and understanding - additional information is still required.
- PA staffing numbers – staff numbers are below the optimum level.
- Operational budget – the operational budget is insufficient for the critical management of the forest complex.
- Tourism infrastructure – Tourism infrastructure is insufficient to service the current volume of visitors.

2.10. Summary of management issues, challenges and opportunities

Table 3: Management challenges and issues

Key performance area	Issue that must be addressed
Legal compliance and law enforcement	▪ Illegal entry points and roads through the reserve. ▪ Poaching and wood theft within the reserve. ▪ Issues of arson fires.
Stakeholder engagement	▪ The relationship between Ezemvelo and the local communities are sensitive.
Buffer zone protection and regional management	▪ Poor relationships with municipalities and government departments. ▪ Alignment of the forest complex with municipal planning documents including IDPs and SDFs.
Eco-tourism development	▪ Tourism numbers are low and the possibility to gain support from the Ezemvelo Marketing Unit in order to profile the reserves needs to be investigated. ▪ There are potential opportunities for eco-tourism and the feasibility of these needs to be investigated and implemented. ▪ Potential to market the Nkandla Forest Complex needs to be investigated as part of the tourism strategy for the District Municipality. ▪ Hiking trails are inadequately documented.

Conservation management	▪ Soil erosion along foot paths. ▪ No formal fire management plan. ▪ Compliance in terms of the National Veld and forest fire Act. ▪ Grazing management is a key issue in the reserves since there are areas without a boundary fence. ▪ Damage causing animals. ▪ Lack of knowledge of fauna and flora.
Operational management	▪ Lack of signage within the reserve and outside. ▪ Maintenance of infrastructure. ▪ Lack of Financial and Human resources to effectively manage the reserves. ▪ No electricity available on the Nkandla Forest Reserve. ▪ Poor communication infrastructure. ▪ Water abstraction is poorly documented.

3. STRATEGIC MANAGEMENT FRAMEWORK

In an effort to ensure that Nkandla Forest Complex 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 forest complex over the next five years and has been prepared collaboratively through a process involving stakeholders within Ezemvelo KZN Wildlife, the communities around the forest complex, local and provincial government departments and other stakeholders.

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

3.1. Nkandla Forest Complex vision

"To effectively manage the Nkandla Forest Complex, such that it maintains its integrity and representivity of the Ngome-Nkandla Scarp Forest ecosystem, which is characterised by its unique vegetation elements, associated wildlife and landscape, is to be restored and maintained with the support of the local communities."

3.2. Objectives and strategic outcomes

An objective has been identified for each of Nkandla Forest Complex key performance areas, which follow from the management challenges, issues and opportunities, and relate to the important functions and activities necessary to protect, develop and manage it effectively. The objectives have then been translated into strategic outcomes, which form the basis for the management activities and targets set out in the operational management framework, described in Section 6 below. Table 3.1 sets out the key performance areas, the objective for each key performance area and the strategic outcomes, required to realise the objectives.

Table 4: Objectives and strategic outcomes for Nkandla Forest Complex

Key performance area	Objective	Strategic outcome
Legal compliance and law enforcement	Comply with and enforce legislation pertaining to the protection, development and management of NFC.	▪ Ensure that there is adequate law enforcement within the Nkandla Forest Complex (NFC) to protect its integrity.
Stakeholder engagement	Establish and maintain effective stakeholder relations through communication and collaboration.	▪ Establish and maintain a liaison forum for the NFC to facilitate constructive community involvement. ▪ Provision of support to the community in developing its capacity to make inputs into the management of the NFC and to understand the values of the forest complex.
Buffer zone protection and regional management	Protect the biodiversity and cultural assets of NFC by promoting compatible Land-use and activities in areas surrounding the boundary of the reserve that may threaten it.	▪ Determination of the buffer zone requirements around the forest complex. ▪ Prioritisation of key buffer zone areas within the provincial Protected Area Expansion Plan. ▪ Incorporation of the Nkandla Forest Complex's buffer requirements in municipal and regional planning documents.
Eco-tourism development	Promote and develop opportunities for eco-tourism and environmental awareness.	▪ Determination of a tourism market profile, through tourism market research for the NFC. ▪ Preparation and implementation of a feasibility study indicating the tourism options that may be considered for the NFC. ▪ Promote tourism in the area through profiling the region in collaboration with the Ezemvelo marketing programme. ▪ Development and implementation of an environmental interpretation and education programme.
Cultural heritage management	Ensure the protection and public appreciation of all cultural and heritage resources within the forest complex in accordance with statutory regulations.	▪ Ensure the protection and the improved awareness of the cultural heritage values of the forest complex.
Conservation management	Protect the ecological integrity and functioning of the NFC through active	▪ Development of a comprehensive fire management plan for the forest complex. ▪ Adequate fire safety within the forest complex is ensured.

	interventions based on principles of adaptive management.	▪ Annual planning is undertaken for the implementation of the season's burning regime. ▪ Development of an invasive species control plan for the forest complex. ▪ Achievement of a significant reduction in levels of invasive plant infestations in the forest complex. ▪ 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 forest complex. ▪ If extractive resource use is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy. ▪ If bio-prospecting is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy. ▪ Development of a strategy for the introduction and management of wildlife into the forest complex in accordance with Ezemvelo KZN Wildlife policies. ▪ Development and implementation of a strategy for problem animal control. ▪ Processes are established to determine success of management interventions in protecting the ecosystems, communities and species of the forest complex. ▪ Gain a better understanding of flora and fauna within the forest complex. ▪ Rare and endangered species management is undertaken based on the best available scientific knowledge.
Operational management	Provide adequate human resources, equipment, infrastructure and funding to enable the effective protection, development and management of the NFC.	▪ Development of a financial plan that identifies the resource needs to achieve the objectives for the forest complex. ▪ The forest complex is adequately staffed for its effective management and operation. ▪ All facilities and infrastructure in the forest complex are adequately maintained. ▪ An effective radio communication system is developed and maintained. ▪ All staff and administrative infrastructure to have electricity.

4. ZONATION PLAN

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

4.1. Zonation of Nkandla Forest Complex

A standardised zonation system has been developed for all of Ezemvelo KZN Wildlife's protected areas. This system enables a protected area to be zoned according to six categories, which are spread along a continuum, 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.

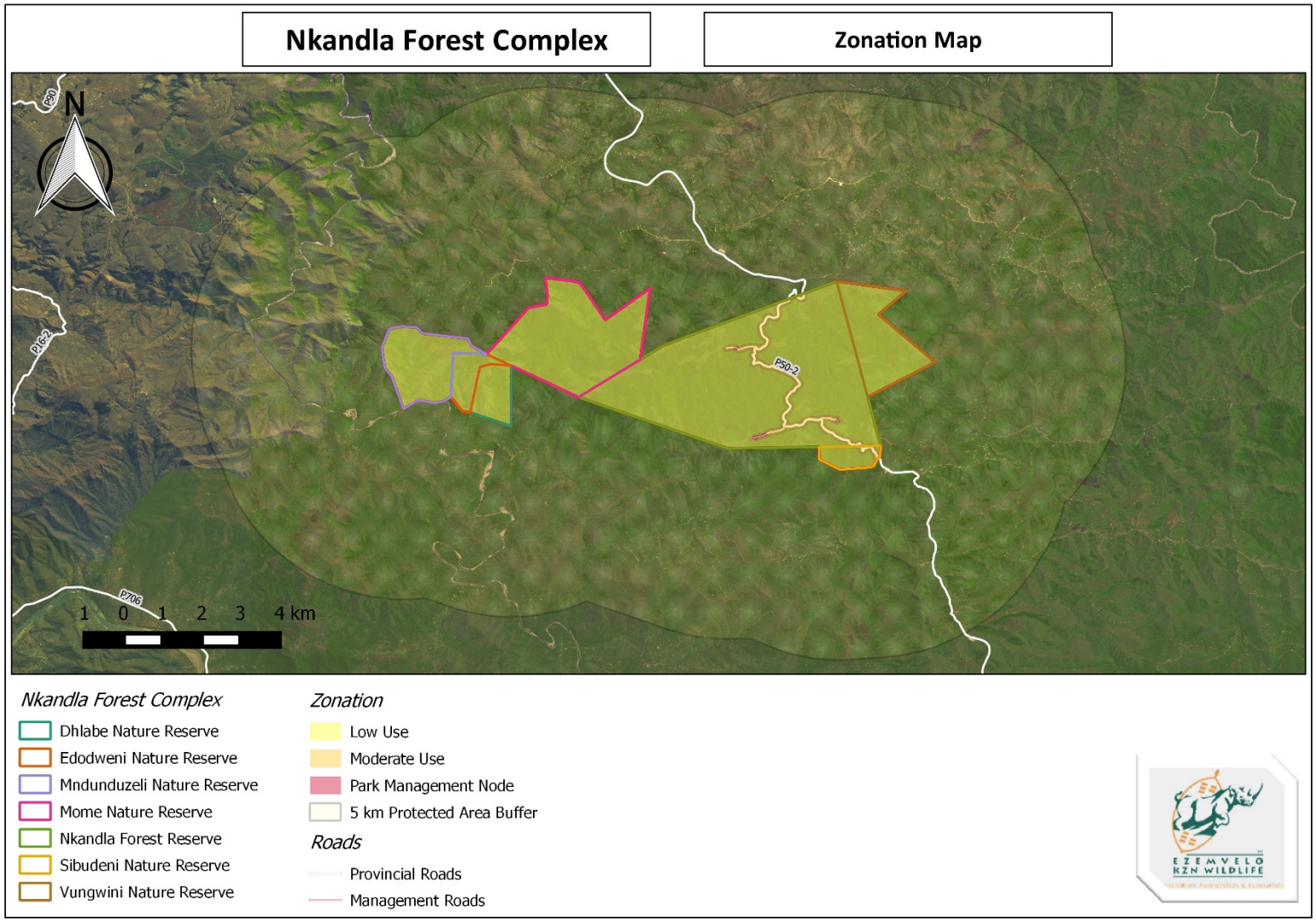
Zonation is a composite of ecological zonation (based on natural resource sensitivity), sense of place, cultural features, patterns of environmental settings, and existing development and use patterns. The final zonation map is represented as a desired state, i.e. directing management towards a vision for each zone, which reflects and respects the broader conservation and eco-tourism objectives for the protected area.

General principles:

- There is a general gradation in the zonation categories ranging from high to low protection.
- A node is an area where tourism, management and service infrastructure can be developed and that has a specified footprint.
- 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 will take place in accordance with the local protected area rules and regulations.

See Map G - Zonation of Nkandla Forest Complex.



Map G: Zonation of Nkandla Forest Complex

4.2. Concept development guidelines

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

See table 5: Zonation categories for Nkandla Forest Complex

Table 5: Zonation Categories for Nkandla Forest Complex

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	▪ Facilities of a rustic nature such as small bush camps, rustic overnight hiking huts, hides and trails. ▪ Motorized access is low-key and 4 x 2 access is provided to points where trails start or to tourist facilities. ▪ 4 x 4 tracks are allowed in this zone (limit to number of tracks and frequency of use) as per site specific rules and regulations. ▪ Hiking and formalised trails. Management activities must focus on protecting park resources and core values. ▪ Limited management roads and tracks. ▪ Controlled extractive resource use in line with Ezemvelo KwaZulu-Natal Wildlife policies and norms and standards.
Constraints and implementation	▪ Activities are mostly low impact and low density. ▪ No modern facilities such as restaurants and shops are permissible in this zone. ▪ Where possible, facilities should be developed on the periphery of the zone towards the less sensitive adjacent zone.
Moderate use zone	
Description	An area where natural processes and the landscape may be altered to support protected area operations. This zone is less sensitive than the low use zone and this is where experiences, facilities, infrastructure and services are provided to visitors and where general park management activities can take place.
Objective	To designate 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	▪ 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	▪ 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. ▪ 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 buffer zone	
Description	An area outside the boundary of the protected area where actions are taken and agreements are made to protect the integrity of the protected area and to enhance the livelihoods of protected area neighbours.
Objective	An area outside the boundary of the protected area where actions are taken and agreements are made to protect the integrity of the protected area and to enhance the livelihoods of protected area neighbours. To influence land use adjacent to the protected area to manage external pressures and threats that may threaten its values and objectives.
Activities and infrastructure	The Park management must define these activities in terms of its specific values and objectives and taking into consideration the following: ▪ Alien and invasive species management ▪ Pollution control and prevention ▪ Impact on sense of place ▪ Habitat fragmentation and isolation ▪ Water resource protection ▪ Human/ Wildlife conflict ▪ Climate change adaptation

	▪ Compatible land use ▪ Priority species management
Constraints and implementation	It is desirable for the intensity of land use to decrease closer to the protected area. Activities that are not compatible with the adjacent protected area zonation must be discouraged. Management activities will focus on: ▪ Strategically promoting and monitoring compatible land-use and land-care on adjacent lands and upstream catchments ▪ Integrated alien species control ▪ Biodiversity stewardship and environmental awareness ▪ Working collaboratively with neighbours to secure sensitive sites that contribute to the protection of values and objectives of the protected area. ▪ Influencing and input into the municipal and regional planning tools such as SDFs, Schemes, IDPs and Bioregional Plans. ▪ The Buffer should spatially reflect the 5 km border of listed activities as per National Environmental Management Act No. 107 of 1998 Notice 3 of 2010.

5. ADMINISTRATIVE STRUCTURE

A recommended organisational structure for Nkandla Forest Complex is set out in Figure 3. The figure represents the staff complement and positions that are required to enable the effective operation, management and protection of Nkandla Forest Complex.

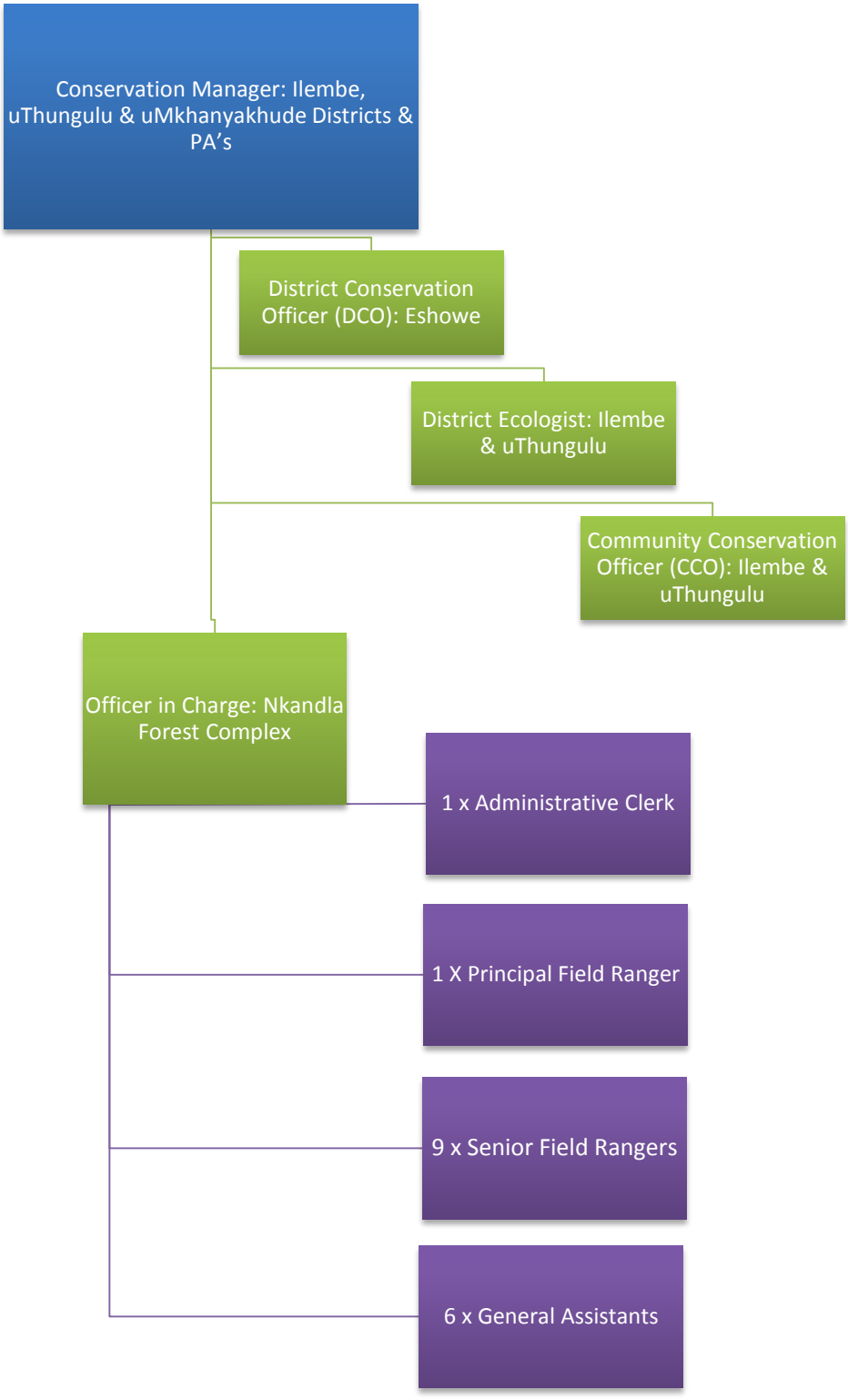


Figure 3: Organisational structure for Nkandla Forest Complex

6. OPERATIONAL MANAGEMENT FRAMEWORK

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

6.1. Determination of priorities for strategic outcomes

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

Priority 1:	A management target that is central to the responsibilities and mandate of Ezemvelo KZN Wildlife or that addresses an aspect of management that is fundamental to the protection of the values and purpose of Nkandla Forest Complex.
Priority 2:	A management target that addresses an aspect of management that contributes towards community involvement and support for the conservation of Nkandla Forest Complex, 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 Nkandla Forest Complex and/or its surrounding local communities.

6.2. Legal compliance and law enforcement

Through its mandate to undertake the conservation and management of protected areas in KwaZulu-Natal, Ezemvelo KZN Wildlife must ensure that the province's protected areas are appropriately legally protected and that the laws governing the use of protected areas and the prohibition of particular activities are enforced. In fulfilling this role, the managers of Nkandla Forest Complex 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.

6.3. Stakeholder engagement

Constructive relationships with adjacent landowners and communities are an important aspect of the effective conservation of protected areas. Stakeholder engagement should be aimed at developing a strong sense of understanding between the neighbours and communities around the forest complex 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.

A Traditional Authority Forum for the Nkandla Forest Complex is in place, which consist of the following Tribal Authorities:

- Inkosi Biyela – Mangidini Tribal Authority
- Inkosi Shezi – Machubeni Tribal Authority
- Inkosi Khanyile – Inindlozi Tribal Authority

6.3.1. Land Claims

In December 1998, the Amachube Community Trust lodged a land claim with the Regional Land Claims Commission of KwaZulu-Natal. The Nkandla Forest Reserve is one of the properties part of the land Claim: KRN6/2/2/E/33/0/0/4. This claim has not been settled and is currently being negotiated.

The operational requirements for legal compliance and enforcement, and stakeholder engagement are set out in Table 6 below.

Table 6: Framework for legal compliance and law enforcement, and stakeholder engagement

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
LAW ENFORCEMENT					
Ensure that there is adequate law enforcement within the Nkandla Forest Complex (NFC) to protect its integrity.	▪ Develop an integrated security strategy for the forest complex, which ensures collaboration with all relevant institutions.	▪ Creation of cooperative structures with local communities and law enforcement officials.	▪ Frequent recovery of snares. ▪ Arson fires. ▪ Recorded losses of game species. ▪ Recorded losses of known rare and endangered plant species.	Year 2	Officer in Charge
	▪ Ensure that staff are equipped and trained to undertake patrols within the forest complex for law enforcement purposes. ▪ Implement a programme of patrols of the forest complex and its boundaries.	▪ Regular patrols covering the full extent of the NFC. ▪ Prosecution of any offender caught committing an offence.		Ongoing	Officer in Charge
Strategic outcome	**Management activities**	**Management targets**	**Indicators of Concern**	**Priority**	**Responsibility**
STAKEHOLDER ENGAGEMENT					
Establish and maintain a liaison forum for the NFC to facilitate constructive community involvement.	▪ Ensure open lines of communication between members of the local communities and the forest complex's management.	▪ Quarterly meetings of the advisory committee.	▪ Lack of regular meetings and community dissatisfaction with the forest complex.	Ongoing	Officer in Charge
Provision of support to the community in developing its capacity to make inputs into the management of the NFC and to understand the values of the forest complex.	▪ Support the community in creating an understanding of the values and management of the forest complex through the advisory committee and in conjunction with strategic partners.	▪ Capacity building in the communities in terms of management of the reserves, an understanding of the values and management of the forest complex.	▪ Lack of understanding of issues and management practices at the forest complex.	Ongoing	Community Conservation Officer

6.4. Buffer zone protection and regional management

6.4.1. Protected area expansion and buffer zone management

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

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

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 forest complex's boundary and beyond it.

6.4.2. Local and regional planning

It is important, in managing the buffer areas around the forest complex, that Ezemvelo KZN Wildlife work with local government authorities to ensure that their land use planning considers the biodiversity conservation imperatives of Nkandla Forest Complex. In this regard it is necessary to ensure that buffer zone considerations are captured in planning tools such as IDPs and SDF's. 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 7 below.

Table 7: Framework for buffer zone protection and regional management

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
PROTECTED AREA EXPANSION					
Determination of the buffer zone requirements around the forest complex.	▪ Determine the ecological impacts and edge effects influencing the ecology of the forest complex on its boundary. ▪ Determine the areas that should be demarcated as buffer zones for the purposes of protecting the biodiversity within the forest complex.	▪ Identification of threatening processes on the forest complex's boundary.	▪ Edge effects such as invasive plant encroachment along the forest complex's boundary.	Year 2	Ezemvelo KZN Wildlife Ecological Advice Unit
Prioritisation of key buffer zone areas within the provincial Protected Area Expansion Plan.	▪ Focus efforts of the biodiversity stewardship programme on priority areas in the buffer around the NFC.	▪ Focus efforts of the biodiversity stewardship programme on priority areas in the buffer around the NFC.	▪ Detrimental impacts due to land use changes in the buffer areas.	Year 3	Ezemvelo KZN Wildlife stewardship Unit.
Strategic outcome	**Management activities**	**Management targets**	**Indicators of Concern**	**Priority**	**Responsibility**
LOCAL AND REGIONAL PLANNING					
Incorporation of the Nkandla Forest Complex's buffer requirements in municipal and regional planning documents.	▪ 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 forest complex's buffer zones.	▪ Adoption of environmentally appropriate land uses in IDPs and SDFs in the areas immediately surrounding the forest complex. ▪ Retention of existing benign land uses in the areas immediately surrounding the protected area.	▪ Identification/approval of environmentally harmful land uses on the boundaries of the forest complex.	Annually	Officer in Charge

6.5. Eco-tourism

6.5.1. Tourism product development and management

Ezemvelo KZN Wildlife has the mandate to sustainably develop Nkandla Forest Complex to fully realise its eco-tourism and associated income-generating potential, within the context of protecting its biodiversity and cultural values. Several nature-based tourism products have been developed within the forest complex and there is the potential to further develop nature-based and cultural-based tourism products. In further developing tourism within the forest complex, 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 forest complex 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.

6.5.2. Environmental education and interpretation

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

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

The detailed operational requirements for eco-tourism development and environmental education and interpretation are set out in Table 8 below.

Table 8: Framework for eco-tourism

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
ECO-TOURISM PRODUCT DEVELOPMENT					
Determination of a tourism market profile, through tourism market research for the NFC.	▪ Capture visitor information and statistics in order to better understand the forest complex's tourist numbers and market. ▪ Develop an understanding of tourism in the region in order to inform the types of products and activities that may be offered.	▪ An understanding of annual tourist numbers and a tourism market profile for the forest complex.	▪ Declining tourist numbers. ▪ Unprofitable occupancy rates in accommodation within the forest complex.	Year 2	Ezemvelo KZN Wildlife Ecotourism and Marketing Unit
Preparation and implementation of a feasibility study indicating the tourism options that may be considered for the NFC.	▪ Identify in consultation with stakeholder's tourism products that could sustainable be developed to meet the tourism market requirements based on the feasibility study. ▪ Consideration must be given to potential value adding community based ventures. ▪ Develop a detailed map outlining potential tourism products including hiking trails within the context of the reserves zonation plan. ▪ In accordance with the feasibility study and the map implement the agreed upon tourism products. ▪ Ensure that all access roads to the reserve are signposted in the standard Ezemvelo format. ▪ Ensure that there is a standardized entrance and boundary sign. ▪ Ensure that there are effective directional, interpretation and information signage and brochures based on the feasibility study.	▪ A feasibility study to guide the development of tourism products in the Forest Complex. ▪ Sustainable tourism products within the reserve.	▪ Ad hoc development and unsustainable development of tourism products within the nature reserve. ▪ Lack of sustainable tourism products in the nature reserves.	Year 3	Regional Officer in Charge

Promote tourism in the area through profiling the region in collaboration with the Ezemvelo marketing programme.	▪ Develop and implement a marketing strategy to be incorporated in the Ezemvelo marketing programme.	▪ A well profiled protected area with sustainable tourist numbers.	▪ Tourism products that are not utilised to its potential.	With implementation	Ezemvelo Marketing Unit
Strategic outcome	**Management activities**	**Management targets**	**Indicators of Concern**	**Priority**	**Responsibility**
ENVIRONMENTAL INTERPRETATION AND EDUCATION					
Development and implementation of an environmental interpretation and education programme.	▪ Focus on environmental interpretation and education amongst the forest complex's neighbouring communities and visitors. ▪ Employ and train members of the local community to assist in and to implement the programme.	▪ Provision of an environmental interpretation and education tour to schools in the neighbouring local communities.	▪ Lack of interest in implementing the programme.	Year 3	Ezemvelo KZN Wildlife Community Conservation Officer

6.6. Conservation management

6.6.1. Fire management

Fire plays an important role in the ecological dynamics of grasslands and wetlands, and has important effects on vegetation composition, primary productivity and nutrient cycling. In developing burning and fire management strategies for the 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 forest complex) 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 9 below.

Table 9: Framework for conservation management - fire management

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
FIRE MANAGEMENT					
Development of a comprehensive fire management plan for the forest complex.	▪ The fire management plan must address fire management objectives, scientific understanding, legal compliance, and equipment, personnel training requirements, monitoring and research required.	▪ Adoption and implementation of the fire management plan.	▪ Burning regimes that result in ecological degradation of the forest complex.	Year 1	Officer in Charge and Ecological Advice Unit
Adequate fire safety within the forest complex is ensured.	▪ Maintain a system of firebreaks within the forest complex 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 forest complex. ▪ Become a member of the local Fire Protection Association, or if one does not exist, champion the creation of one.	▪ Compliance with the National Veld and Forest Fires Act.	▪ Inadequate personnel, equipment or an inability to communicate effectively in fighting fires. ▪ Wildfires spreading from the forest complex to neighbouring properties.	Ongoing	Officer in Charge
Annual planning is undertaken for the implementation of the season's burning regime.	▪ Review the previous fire season burns (planned and unplanned) in determining the burning regime for the coming season. ▪ Determine the annual burning requirements.	▪ Burning according to the annual plan based on ecological advice.	▪ Unplanned fires	Annually	Officer in Charge and Ecological Advice Unit

6.6.2. Invasive plant control

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

- Invasive plant control will require an ongoing programme that prioritises key infestations along water courses, drainage lines and upper catchment areas.
- Initial clearing efforts should focus on containing infestations that are most likely to spread into new areas.
- All follow-up requirements must be strictly adhered to otherwise the problem will be exacerbated.

Strategic partnerships and poverty relief programmes such as the Working for Water programme should be utilised in controlling invasive plants.

6.6.3. Soil erosion control

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

- Areas impacted by soil erosion should be stabilised and re-vegetated with indigenous plant species to prevent the spread of listed invasive plant species.
- Areas susceptible to soil erosion, or showing early signs of soil erosion such as loss of vegetation cover, must be managed to prevent soil erosion.

Soil erosion control and rehabilitation measures may include the need to re-vegetate disturbed areas. A detailed assessment of the nature and extent of soil erosion within the forest complex 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 10 below.

Table 10: Framework for conservation management - invasive plant control and soil erosion

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
INVASIVE PLANT CONTROL					
Development of an invasive species control plan for the forest complex.	▪ 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. ▪ 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.	▪ Further spread of existing levels of infestation of listed invasive species. ▪ Persistence of existing infestations. ▪ New infestations of listed invasive species.	Year 1	Forest complex Manager, Ecological Advice Unit and Alien Plant Control Unit
Achievement of a significant reduction in levels of invasive plant infestations in the forest complex.	▪ Implement the control plan for the forest complex. ▪ Implement concerted, sustained control efforts in identified areas of heavy invasive plant infestation. ▪ Undertake suitable rehabilitation measures, including re-vegetation using indigenous plant species, to prevent soil erosion, following clearing of invasive plant species. ▪ Develop partnerships with Working for Water and other strategic programmes.	▪ 50% reduction in infestations of all listed invasive plants in five years.		Year 5	Ezemvelo KZN Wildlife Alien Plant Control Unit and Officer in Charge
Strategic outcome	**Management activities**	**Management targets**	**Indicators of Concern**	**Priority**	**Responsibility**
SOIL EROSION CONTROL					
Implementation of procedures to identify, rehabilitate and manage areas that have been significantly impacted by soil erosion.	▪ Undertake a detailed survey of the forest complex to identify the extent and severity of soil erosion. ▪ Identify the requirements for soil erosion control and rehabilitation within the forest complex. ▪ Implement soil erosion control and rehabilitation measures, focussing strategically on key areas such as	▪ A detailed map depicting areas of soil erosion within the forest complex. ▪ Implementation of soil erosion control measures in areas in which plant cover is	▪ Further erosion of impacted areas. ▪ Sedimentation impacts in watercourses.	Year 5	Officer in Charge

	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.	low, which are susceptible to erosion.			

6.6.4. Alien animal control

Alien animal species can threaten the ecological, genetic or natural aesthetic integrity of Nkandla Forest Complex 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 forest complex should be developed. In addressing alien animal control, the following guiding principles should be adhered to:

- Feral animal species that pose a threat to indigenous species will be destroyed (as humanely as practicably possible with due regard to the tourist experience).

6.6.5. Resource utilisation

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

- The context of the forest complex'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 11 below.

Table 11: Framework for conservation management - alien animal control and resource utilisation

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
ALIEN ANIMAL CONTROL					
Implementation of procedures to manage alien animals found within the forest complex.	▪ Together with neighbouring communities, agree on the approach to dealing with stray livestock and domestic animals found in the forest complex, particularly dogs, which may be used for illegal hunting. ▪ Develop a policy to address the control of feral animals and alien fish found within the forest complex.	▪ Creation of cooperative structures between Ezemvelo KZN Wildlife, local communities and law enforcement officials. ▪ Control of any alien animals found within the forest complex.	▪ Uncontrolled access of domestic animals or livestock within the forest complex.	Year2	Officer in Charge
Strategic outcome	**Management activities**	**Management targets**	**Indicators of Concern**	**Priority**	**Responsibility**
RESOURCE UTILISATION					
If extractive resource use is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy.	▪ Together with neighbouring communities, agree on the approach to sustainable extractive resource use in the forest complex. ▪ Ensure that any approved extractive resource use is aligned to the protected area zonation plan.	▪ An agreed upon approach to any extractive resource use.	▪ Uncontrolled or unsustainable resource extraction	If required	Officer in Charge
If bioprospecting is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy.	▪ Only allow the collection of biological materials or samples if the appropriate permits or permission has been given in accordance with Ezemvelo KZN Wildlife policy.	▪ No illegal collection of biological material or samples.	▪ Illegal collection of biological material or samples.	If required	Officer in Charge and Resource Use Ecologist

6.6.6. 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 forest complex and meeting set provincial conservation targets for species and vegetation types.
- The introduction of indigenous species into the forest complex 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 forest complex.

Animals that become a danger or excessive nuisance to persons and property due to either habituation or aberrant behaviour must be managed in accordance with relevant Ezemvelo KZN Wildlife policies.

6.6.7. Conservation targets

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

Table 12: Systematic biodiversity planning conservation targets to which Nkandla Forest Complex contribute

Abbreviations:

VU: Vulnerable LT: Least Threatened CR: Critically Endangered EN: Endangered

Protected Area	Feature	Description	% target	Status
Dhlabe	*Charaxes xiphares penningtoni*	Butterfly	0.08	
Dhlabe	*Odontomelus eshowe*	Grasshoper	1.59	
Dhlabe	*Diceros bicornis minor*	Mammal	0.00	VU
Dhlabe	*Allawrencius nodulosus*	Millipede	0.05	
Dhlabe	*Centrobolus bifidus*	Millipede	0.05	
Dhlabe	*Doratogonus falcatus*	Millipede	0.05	
Dhlabe	*Doratogonus natalensis*	Millipede	0.05	
Dhlabe	*Doratogonus peregrinus*	Millipede	0.28	
Dhlabe	*Euonyma lymneaeformis*	Molusc	0.01	
Dhlabe	*Gulella euthymia*	Molusc	0.06	
Dhlabe	Eastern Scarp Forests : Ngome-Nkandla Scarp Forest	Vegetation Type	0.17	LT

Protected Area	Feature	Description	% target	Status
Dhlabe	Eastern Valley Bushveld	Vegetation Type	0.01	LT
Dhlabe	Moist Ngongoni Veld	Vegetation Type	0.03	CR
Edodweni	*Eremidium erectus*	Grasshoper	0.00	
Edodweni	*Odontomelus eshowe*	Grasshoper	0.24	
Edodweni	*Whitea alticeps*	Grasshoper	0.00	
Edodweni	*Diceros bicornis minor*	Mammal	0.00	VU
Edodweni	*Doratogonus falcatus*	Millipede	0.01	
Edodweni	*Doratogonus natalensis*	Millipede	0.06	
Edodweni	*Doratogonus peregrinus*	Millipede	0.16	
Edodweni	*Euonyma lymneaeformis*	Molusc	0.01	
Edodweni	Eastern Valley Bushveld	Vegetation Type	0.00	LT
Edodweni	Midlands Mistbelt Grassland	Vegetation Type	0.00	CR
Edodweni	Moist Ngongoni Veld	Vegetation Type	0.02	CR
Mndunduzeli	*Eremidium erectus*	Grasshoper	0.04	
Mndunduzeli	*Odontomelus eshowe*	Grasshoper	1.38	
Mndunduzeli	*Whitea alticeps*	Grasshoper	0.03	
Mndunduzeli	*Whitea coniceps*	Grasshoper	0.05	
Mndunduzeli	*Diceros bicornis minor*	Mammal	0.01	VU
Mndunduzeli	*Centrobolus fulgidus*	Millipede	0.01	
Mndunduzeli	*Doratogonus falcatus*	Millipede	0.00	
Mndunduzeli	*Doratogonus natalensis*	Millipede	0.31	
Mndunduzeli	*Doratogonus peregrinus*	Millipede	0.54	
Mndunduzeli	*Spinotarsus glomeratus*	Millipede	0.04	
Mndunduzeli	*Euonyma lymneaeformis*	Molusc	0.07	
Mndunduzeli	*Gulella euthymia*	Molusc	0.01	
Mndunduzeli	Eastern Valley Bushveld	Vegetation Type	0.00	LT
Mndunduzeli	Midlands Mistbelt Grassland	Vegetation Type	0.02	CR
Mndunduzeli	Moist Ngongoni Veld	Vegetation Type	0.04	CR
Mome	*Columba delegorguei*	Ave	3.42	VU
Mome	*Charaxes xiphares penningtoni*	Butterfly	8.75	
Mome	*Eremidium erectus*	Grasshoper	1.45	
Mome	*Odontomelus eshowe*	Grasshoper	0.69	
Mome	*Pagopedilum martini*	Grasshoper	1.54	
Mome	*Whitea alticeps*	Grasshoper	0.58	
Mome	*Whitea coniceps*	Grasshoper	0.62	
Mome	*Allawrencius nodulosus*	Millipede	6.49	
Mome	*Centrobolus bifidus*	Millipede	7.67	
Mome	*Centrobolus fulgidus*	Millipede	0.85	
Mome	*Doratogonus natalensis*	Millipede	5.30	
Mome	*Doratogonus peregrinus*	Millipede	4.62	
Mome	*Spinotarsus glomeratus*	Millipede	0.46	
Mome	*Euonyma lymneaeformis*	Molusc	0.33	
Mome	*Asclepias woodii*	Plant	8.13	EN

Protected Area	Feature	Description	% target	Status
Mome	*Bradypodion nkandlae*	Reptile	15.75	
Mome	Eastern Scarp Forests : Ngome-Nkandla Scarp Forest	Vegetation Type	8.65	LT
Mome	Midlands Mistbelt Grassland	Vegetation Type	0.22	CR
Mome	Moist Ngongoni Veld	Vegetation Type	0.00	CR
Nkandla	*Proandricus babanango*	Annelid	16.67	
Nkandla	*Tritogenia karkloofia*	Annelid	25.00	
Nkandla	*Tritogenia tetrata*	Annelid	75.00	
Nkandla	*Udeina nkandla*	Annelid	100.00	
Nkandla	*Columba delegorguei*	Ave	15.83	VU
Nkandla	*Sciobius tenuicornis*	Beetle	50.00	
Nkandla	*Charaxes xiphares penningtoni*	Butterfly	37.71	
Nkandla	*Orachrysops ariadne*	Butterfly	0.31	
Nkandla	*Papilio ophidicephalus zuluensis*	Butterfly	66.67	
Nkandla	*Stagira nkandlhaensis*	Cicad	100.00	
Nkandla	*Damalis femoralis*	Diplopoda	9.38	
Nkandla	*Eremidium erectus*	Grasshoper	2.67	
Nkandla	*Odontomelus eshowe*	Grasshoper	0.48	
Nkandla	*Pagopedilum martini*	Grasshoper	1.89	
Nkandla	*Whitea alticeps*	Grasshoper	0.98	
Nkandla	*Whitea coniceps*	Grasshoper	0.59	
Nkandla	*Allawrencius nodulosus*	Millipede	24.63	
Nkandla	*Centrobolus bifidus*	Millipede	31.51	
Nkandla	*Centrobolus fulgidus*	Millipede	3.64	
Nkandla	*Doratogonus natalensis*	Millipede	17.47	
Nkandla	*Doratogonus peregrinus*	Millipede	7.46	
Nkandla	*Gnomeskelus harpagonifer*	Millipede	100.00	
Nkandla	*Spinotarsus glomeratus*	Millipede	0.64	
Nkandla	*Stenjulomorpha sp. nov.*	Millipede	100.00	
Nkandla	*Euonyma lymneaeformis*	Molusc	0.27	
Nkandla	*Gulella crassidens*	Molusc	14.29	
Nkandla	*Trachycystis haygarthi*	Molusc	100.00	
Nkandla	*Trachycystis placenta*	Molusc	100.00	
Nkandla	*Aloe saundersiae*	Plant	6411.75	EN
Nkandla	*Asclepias woodii*	Plant	74.36	EN
Nkandla	*Cryptocarya myrtifolia*	Plant	6.25	VU
Nkandla	*Disa zuluensis*	Plant	100.00	EN
Nkandla	*Helixanthera woodii*	Plant	50.00	DD
Nkandla	*Kniphofia buchananii*	Plant	0.16	LC
Nkandla	*Mystacidium aliceae*	Plant	50.00	VU
Nkandla	*Ocotea bullata*	Plant	6.67	Declining
Nkandla	*Pachycarpus rostratus*	Plant	100.00	CR
Nkandla	*Schizochilus gerrardii*	Plant	20.00	EN
Nkandla	*Stenoglottis longifolia*	Plant	33.33	LC

Protected Area	Feature	Description	% target	Status
Nkandla	*Tenaris christianae*	Plant	100.00	VU
Nkandla	*Bradypodion nkandlae*	Reptile	64.64	
Nkandla	Eastern Scarp Forests : Ngome-Nkandla Scarp Forest	Vegetation Type	36.71	LT
Nkandla	Midlands Mistbelt Grassland	Vegetation Type	0.19	CR
Sibudeni	*Columba delegorguei*	Ave	0.50	VU
Sibudeni	*Charaxes xiphares penningtoni*	Butterfly	1.18	
Sibudeni	*Eremidium erectus*	Grasshoper	0.11	
Sibudeni	*Whitea alticeps*	Grasshoper	0.01	
Sibudeni	*Whitea coniceps*	Grasshoper	0.01	
Sibudeni	*Allawrencius nodulosus*	Millipede	0.75	
Sibudeni	*Centrobolus bifidus*	Millipede	0.96	
Sibudeni	*Centrobolus fulgidus*	Millipede	0.13	
Sibudeni	*Doratogonus natalensis*	Millipede	0.60	
Sibudeni	*Doratogonus peregrinus*	Millipede	0.09	
Sibudeni	*Spinotarsus glomeratus*	Millipede	0.01	
Sibudeni	*Euonyma lymneaeformis*	Molusc	0.01	
Sibudeni	*Asclepias woodii*	Plant	3.59	EN
Sibudeni	Eastern Scarp Forests : Ngome-Nkandla Scarp Forest	Vegetation Type	1.10	LT
Sibudeni	Midlands Mistbelt Grassland	Vegetation Type	0.00	CR
Vungwini	*Columba delegorguei*	Ave	1.19	VU
Vungwini	*Charaxes xiphares penningtoni*	Butterfly	3.28	
Vungwini	*Eremidium erectus*	Grasshoper	0.35	
Vungwini	*Pagopedilum martini*	Grasshoper	0.20	
Vungwini	*Whitea alticeps*	Grasshoper	0.15	
Vungwini	*Whitea coniceps*	Grasshoper	0.06	
Vungwini	*Allawrencius nodulosus*	Millipede	2.52	
Vungwini	*Centrobolus bifidus*	Millipede	2.87	
Vungwini	*Centrobolus fulgidus*	Millipede	0.32	
Vungwini	*Doratogonus natalensis*	Millipede	1.57	
Vungwini	*Doratogonus peregrinus*	Millipede	1.12	
Vungwini	*Spinotarsus glomeratus*	Millipede	0.08	
Vungwini	*Euonyma lymneaeformis*	Molusc	0.04	
Vungwini	*Aloe saundersiae*	Plant	1169.50	EN
Vungwini	*Asclepias woodii*	Plant	5.46	EN
Vungwini	*Kniphofia buchananii*	Plant	0.02	LC
Vungwini	*Bradypodion nkandlae*	Reptile	5.75	
Vungwini	Eastern Scarp Forests : Ngome-Nkandla Scarp Forest	Vegetation Type	3.26	LT
Vungwini	Midlands Mistbelt Grassland	Vegetation Type	0.04	CR

The detailed operational requirements for wildlife management and the achievement of conservation targets are set out in Table 13 below.

Table 13: Framework for conservation management - wildlife management and conservation targets

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
WILDLIFE MANAGEMENT					
Development of a strategy for the introduction and management of wildlife into the forest complex in accordance with Ezemvelo KZN Wildlife policies.	▪ Ensure that any proposals for the introduction of wildlife species conform to Ezemvelo KZN Wildlife policies. ▪ Ensure that only species known to have historically occurred in the forest complex are re-introduced. ▪ Ensure that species introductions are adequately documented.	▪ An agreed upon approach to future wildlife species introductions.	▪ Ad hoc introductions of species, particularly those that may not have historically occurred in the forest complex.	Year 2	Ezemvelo KZN Wildlife Ecological Advice Unit and Officer in Charge
	▪ Ensure that adequate population control measures are included in the strategy for the management of wildlife in the forest complex.	▪ Control of population numbers of species that are exceeding identified carrying capacities.	▪ Ecological degradation as a result of over-stocking of wildlife species	Ongoing	
Development and implementation of a strategy for problem animal control.	▪ Undertake preventative measures, such as boundary fence maintenance, to minimise the need for problem animal control. ▪ Apply appropriately humane methods, if problem animals must be destroyed or captured.	▪ Effective procedures and relationships with neighbours in dealing with problem animal control.	▪ Frequent complaints from neighbours with no clear response.	Year 1	Officer in Charge
Gain a better understanding of flora and fauna within the forest complex.	▪ Conduct a full botanical and faunal inventory survey. ▪ Prioritise the survey for endangered and threatened species.	▪ Botanical inventory survey report on which to base management decisions. ▪ Faunal inventory report on which to base management decisions.	▪ Lack of knowledge regarding the composition of fauna and flora within the forest complex.	On-going	Officer in Charge, Resource Use Ecologist and Ecological Advice
Strategic outcome	**Management activities**	**Management targets**	**Indicators of Concern**	**Priority**	**Responsibility**
CONSERVATION TARGETS					
Processes are established to determine success of management	▪ Develop surveillance and monitoring plans for key management interventions in accordance with the	▪ Surveillance and monitoring plans for key threatening processes.	▪ Lack of awareness of the status of key threatening processes including	Year 3	Ezemvelo KZN Wildlife

interventions in protecting the ecosystems, communities and species of the forest complex.	Ezemvelo KZN Wildlife policies and norms and standards.	▪ Monitoring plans for key rare and endangered species.	infestations of invasive plant species and severity and extent of soil erosion.		Ecological Advice Unit
Rare and endangered species management is undertaken based on the best available scientific knowledge.	▪ Ensure that the forest complex are included in and aware of any research being conducted on rare and endangered species that occur in the forest complex, especially those that have conservation targets. ▪ Adopt procedures for the management of rare and endangered species within the forest complex based on known best practices.	▪ Maintenance of optimum population numbers of rare and endangered species.	▪ Declining population numbers of rare and endangered species.	Ongoing	Ezemvelo KZN Wildlife Ecological Advice Unit and Officer in Charge

6.6.8. 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 Nkandla Forest Complex has both natural and cultural values that need to be protected. In managing the cultural assets of Nkandla Forest Complex, 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 14 below.

Table 14: Framework for conservation management - cultural heritage management

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
CULTURAL HERITAGE MANAGEMENT					
Ensure the protection and the improved awareness of the cultural heritage values of the forest complex.	▪ Facilitate in partnership with AMAFA the identification and recording of all cultural heritage sites within the Nkandla Forest Complex.	▪ Photographic and descriptive records of heritage sites.	▪ Cultural heritage areas are not known and therefore not protected. ▪ Loss of cultural items	Year 2	Officer in Charge with AMAFA

6.7. Operational management

6.7.1. Financial and human resources

Nkandla Forest Complex 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 Nkandla Forest Complex to ensure the protection of its biodiversity and cultural values and the continued provision of its ecosystem services.
- Commercial operations within the Nkandla Forest Complex 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 Nkandla Forest Complex to undertake the operations required for its effective management.

6.7.2. Facilities and infrastructure

In order for Nkandla Forest Complex to operate appropriately, adequate facilities and infrastructure need to be developed and maintained both for management and eco-tourism purposes. In addressing facilities and infrastructure needs in the 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 forest complex.
- Practical solutions to the provision of electricity should be sought at the forest complex based on available renewable energy technologies.

Facilities and infrastructure must be provided to support the eco-tourism activities in the protected area.

The detailed operational requirements for financial and human resource, and facilities and infrastructure development and management are set out in Table 15 below.

Table 15: Framework for operational management - financial and human resources, facilities and infrastructure

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
FINANCIAL RESOURCES					
Development of a financial plan that identifies the resource needs to achieve the objectives for the forest complex.	▪ Undertake an assessment of past income and expenditure trends in the forest complex. ▪ Develop a five-year projection of income and expenditure targets that will allow for the effective achievement of the forest complex's objectives.	▪ Adequate funding to achieve the objectives of the forest complex.	▪ Inadequate funding to effectively protect and operate the forest complex.	Year 1	Ezemvelo KZN Wildlife Regional Management Unit
Strategic outcome	**Management activities**	**Management targets**	**Indicators of Concern**	**Priority**	**Responsibility**
HUMAN RESOURCES					
The forest complex is adequately staffed for its effective management and operation.	▪ Undertake a review of current staffing levels to determine the human resource needs to effectively manage the forest complex. ▪ Employ sufficient, appropriately skilled staff to meet the management and operational requirements of the forest complex. ▪ Undertake regular training and skills development to ensure that staff are able to effectively complete their duties.	▪ Submit a proposal for the appointment of staff required to effectively manage the reserves.	▪ Inadequate staff numbers or skills for the effective management of the forest complex.	Year 4	Ezemvelo KZN Wildlife Regional Management Unit

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
FACILITIES AND INFRASTRUCTURE					
All facilities and infrastructure in the forest complex are adequately maintained.	▪ Ensure that the boundary fence is regularly inspected and adequately maintained to ensure security and to contain game species within the forest complex. ▪ 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.	▪ Environmental, health or safety incidents associated with inadequately maintained facilities and infrastructure.	Ongoing	Officer in Charge
	▪ Walking trails are to be identified and mapped. ▪ Walking trails signage is to be developed and installed.	▪ Documentation on all the walking trails in the NFC. ▪ Walking trails are easily identified.	▪ Unknown walking trails.	Year 2	Officer in Charge
An effective radio communication system is developed and maintained.	▪ Investigate and develop communication infrastructure within the forest complex.	▪ Effective communication throughout the forest complex.	▪ Inability to communicate with staff.	Year 1	Officer in Charge
All staff and administrative infrastructure to have electricity.	▪ Follow up on the status of the application to include the staff and administrative infrastructure on to the electricity grid. ▪ Implement the outcomes of the application.	▪ All staffing establishments and administrative infrastructure is to have electricity.	▪ Use of generators	Year 1	Officer in Charge

7. MONITORING AND REPORTING

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

7.1. Annual monitoring

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

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

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

Scientific monitoring programmes may be established to monitor specific management interventions such as measures for the protection of flagship species. Not all of the management interventions will be monitored through the monitoring schedule. Most of the outcomes of the monitoring process will be captured in an annual report, which will be used to inform the following year's annual plan of operation.

On this basis, a monitoring schedule for Nkandla Forest Complex is set out in Table 16.

Table 16: Annual surveillance and monitoring schedule for Nkandla Forest Complex

Management issue	Parameters to be monitored	Monitoring measures	Monitoring frequency	Responsibility	Reporting requirements
Law enforcement	Schedule of patrols	Written record	Weekly	Officer in Charge	Annual report
	Recovery of snares	Photographs/written record	Weekly		Annual report
	Illegal incidents	Photographs/written record	Per event		Record of event
Stakeholder engagement	Minutes of meetings of the local board and community trust	Written record	Bi-monthly	Conservation Manager	Annual report
Buffer zone management	Influx of listed invasive vegetation on the forest complex'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 forest complex in local and regional IDPs and SDFs	Written record	Annually	Ezemvelo KZN Wildlife Senior Officer in Charge	Annual report
Eco-tourism	Visitor statistics	Completion of questionnaire	Ongoing	Officer in Charge	Annual report
Fire management	Burning of firebreaks as part of fire management	Written record/map/photography	Annually	Officer in Charge	Annual report
	Burning of blocks as part of controlled burning		Annually		Annual report
	Unplanned wildfires	Written record/map/photography	Per event		Record of event
Invasive plant control	Areas subject to invasive plant control	Monitoring plan	To be determined	Officer in Charge supported by Ecological Advice Unit	Annual report
	State of areas in which invasive plants have been eradicated				
	Records of labour hours/days	Written record	Annually		Annual report
	Herbicide usage	Written record	Annually		Annual report

Management issue	Parameters to be monitored	Monitoring measures	Monitoring frequency	Responsibility	Reporting requirements
Soil erosion control	Areas subject to erosion control	Monitoring plan	To be determined	Officer in Charge supported by Ecological Advice Unit	Annual report
	State of rehabilitated areas of erosion				Annual report
Conservation targets	Incidents related to flagship species	Photographs/written record	Per event	Officer in Charge	Record of event
	Status of key rare and endangered species, particularly those for which conservation targets have been set	Monitoring plan	To be determined	Officer in Charge supported by Ecological Advice Unit	Annual report
Resource utilisation	Extraction of resources from the forest complex	Photographs/written records	Per event	Officer in Charge	Annual report
Human resources	Staffing levels	Number of full-time staff	Annually	Officer in Charge	Annual report
Facilities and infrastructure	State of roads, 4x4 tracks and paths	Photographs/written records	Quarterly	Officer in Charge	Annual report
	State of the boundary fence	Photographs/written records	Monthly		Annual report
	Weather data	Surveillance plan	To be determined	Ezemvelo KZN Wildlife Ecological Advice Unit	Annual report
	State of facilities and service infrastructure	Maintenance schedule/written records	Monthly	Officer in Charge	Annual report
	Pollution events	Photographs/written records	Per event	Officer in Charge	Per event

As set out in Table 16 the following issues require a surveillance plan:

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

In addition, the following issues require a monitoring plan:

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

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

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

7.2. Annual protected area management plan implementation review

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

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

The report produced from the annual protected area management plan implementation review should be submitted to the Regional Operations Committee, prior to the annual management meeting for Nkandla Forest Complex, 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.

8. NKANDLA FOREST COMPLEX ANNUAL PLAN OF OPERATION

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

8.1. Implementation of the protected area management plan

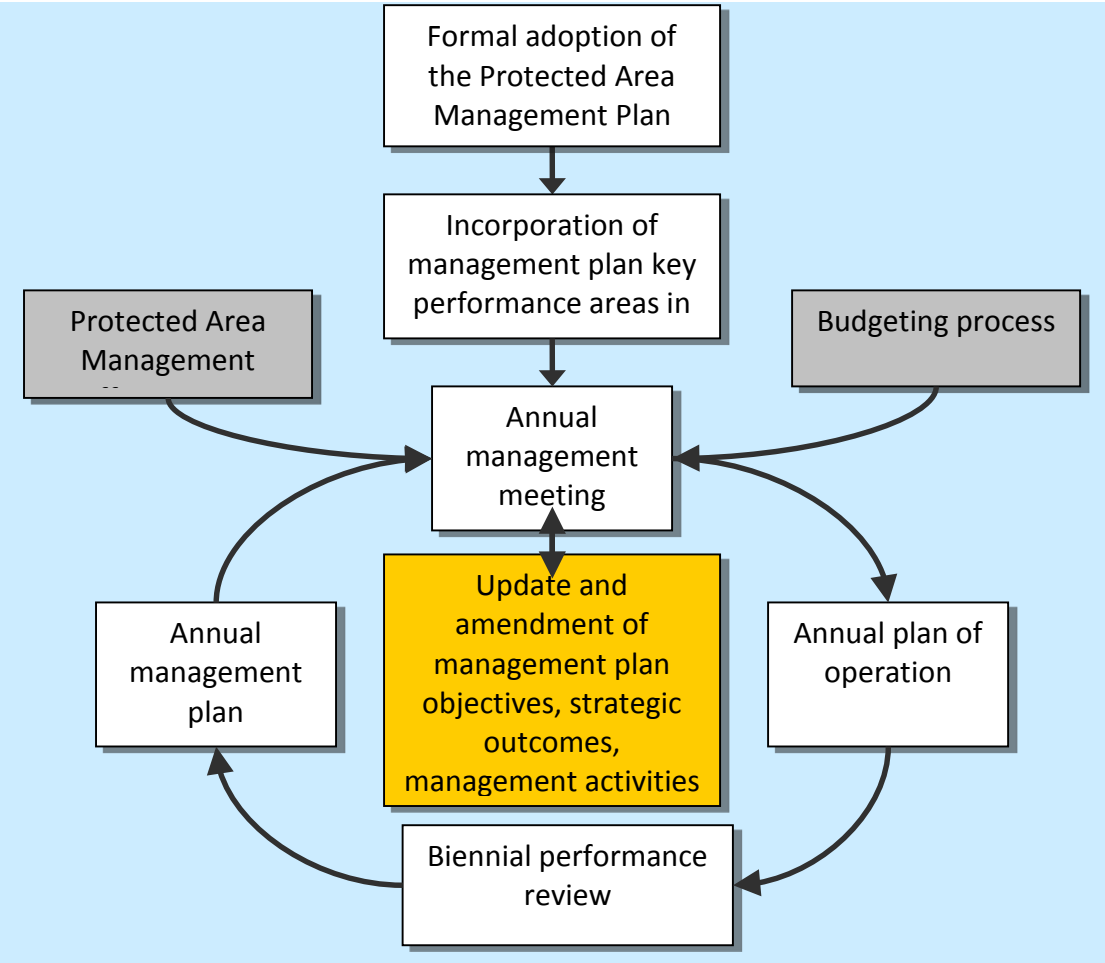


Figure 4: Process for the implementation of Protected Area management Plans

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 Nkandla Forest Complex will be to:

Finalise the annual report, as part of the annual protected area management plan implementation review described in Section 7.2 above.

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

Determine management activities for the coming year and to set goals for the year, based on the key performance areas set out in the management plan, in accordance with the Nkandla Forest Complex manager's performance contract.

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

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

8.2. Responsibilities in implementing the protected area management plan

In the tables in the operational management framework, the responsibilities for the completion of management activities are identified. In many cases the people responsible for implementing the activities will be in attendance at the annual management meeting and the requirements for the achievement of the management activities can be discussed and agreed to at the meeting. In some cases, however, the management activities may be required to be referred to the Regional Operations Committee and the relevant Operations Committee in order to assign responsibility for the completion of the management activity.

8.3. Nkandla Forest Complex resource requirements

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

8.3.1. Staff and equipment

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

- Administration and management of the forest complex.
- Patrolling of the forest complex 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 forest complex.
- Maintenance of facilities and infrastructure within the forest complex.
- Capture of visitor information and statistics.
- Admitting visitors to the forest complex and charging entrance fees.
- Community liaison and cooperation.
- Environmental interpretation and education.

8.3.2 Projects

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

- Installation of electricity to staffing units and administrative offices in the Nkandla Forest Complex.
- Installation of communications infrastructure and purchase of equipment to enable effective communication between staff within the forest complex and with other Ezemvelo KZN Wildlife operations.
- Equipment and infrastructure required to undertake appropriate waste management practices within the forest complex.
- Upgrade of staff houses and administrative facilities within the forest complex.
- Installation of signage directing tourists to the forest complex.
- Installation of directional and interpretive signage within the forest complex.

8.4. Annual financial plan

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

8.5. Financial accounting system

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

8.6. Financial reporting

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

REFERENCES

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

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

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

Borrini-Feyerabend, G., Farvar, G., Nguinguiri, J.c. and Ndangang, V. (2007) Co-management of Natural Resources: Organising, Negotiating and Learning-by-Doing. Germany: GTZ and IUCN (Kasparek Verlag).

De Koning, M. (2010) Analysis of a Model designed for land Restitution in protected areas in South Africa. A Thesis submitted in fulfilment of the requirements of the University of Pretoria for the Degree of Doctor of Philosophy. Pretoria: University of Pretoria.

Department of Environmental Affairs and Tourism. (2007) Memorandum of Agreement with Department of Land Affairs. Pretoria.

Groenewald, P.B. (1984). The Lithostratigraphy and petrogenesis of the Nsuze Group, northwest of Nkandla, Natal. M.S.c thesis, University of Natal, Pietermaritzburg.

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

Appendix A: Definitions of terms

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

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

Management authority	**In relation to a protected area, means the organ of state or other institution or person in which the authority to manage the protected area is vested (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).**
Monitoring	**The collection and analysis of repeated observations or measurements to evaluate change in status, distribution or integrity in order to track the impacts of directed management implemented to achieve a stated management objective.**
Nature conservation	**The conservation of naturally occurring ecological systems, the sustainable utilisation of indigenous plants and animals therein, and the promotion and maintenance of biological diversity (as per the KwaZulu-Natal Nature Conservation Management Act, 1997 [Act No.9 of 1997]).**
Neighbouring community	**The communities and people permanently living in the local municipal area/s bordering onto the Forest complex.**
Natural heritage	**As defined in Article 2 of the World Heritage Convention (UNESCO) 1972 'natural heritage' is as: "natural features consisting of physical and biological formations or groups of such formations, which are of (…) value from the aesthetic or scientific point of view, geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of (…) value from the point of view of science or conservation, natural sites or precisely delineated natural areas of (…) value from the point of view of science, conservation or natural beauty." For the purposes of this IMP, this would include the required ecological integrity of the protected area for the production of ecosystem services.**
Partnerships	**A co-operative and / or collaborative arrangement between the Game Reserve management / Ezemvelo KZN Wildlife and a third party that supports the achievement of the Game Reserve management objectives.**
Protected areas	**Means any area declared or proclaimed as such in terms of section 3 or listed in the Second Schedule to the KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997); or** **Means any of the protected areas referred to in section 9 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).**
Protected area management committee	**Is the management body that deals with the day-to-day management of the protected area and is chaired by the Officer in Charge.**
Ramsar Convention	**Means: "The Convention on Wetlands of International Importance, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty, which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources." (There are presently 158 Contracting Parties to the Convention, the Convention has broadened its scope to cover all aspects of wetland conservation and wise use, recognising wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities.)**
Stakeholders/ interested parties	**These are interested individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups and the general public. According to the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), "stakeholder" means a person, an organ of state or a community**

	contemplated in section 82 (1) (a), or an indigenous community contemplated in section 82(1) (b).
Surveillance	**The collection and analysis of single or repeated measurements to establish status or distribution or integrity at a point in time in the absence of a specific management context or objective.**
Sustainable	**In relation to the use of a biological resource, means the use of such resource in a way and at a rate that would not lead to its long-term decline; would not disrupt the ecological integrity of the ecosystem in which it occurs; and would ensure its continued use to meet the needs and aspirations of present and future generations of people (as per National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).**
Wilderness area	**Means an area designated in terms of section 22 or 26 for the purpose of retaining an intrinsically wild appearance and character, or capable of being restored to such and which is undeveloped and roadless, without permanent improvements or human habitation (as defined by the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).**
World heritage site	**Means a World Heritage Site as defined in the World Heritage Convention Act, No. 49 of 1999 under Chapter 1, section 1 subsection (xxiv).**

Appendix B: List of statutes to which Nkandla Forest Complex is subject

Biodiversity and Cultural Resource Management and Development:

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

General Management:

- Development Facilitation Act [No. 67 of 1995]
- Disaster Management Act [No. 57 of 2002]
- Fire Brigade Services Act [No. 99 of 1987]
- Local Government: Municipal Systems Act [No. 32 of 2000]
- National Road Traffic Act [No. 93 of 1996]
- National Building Standards Act [No. 103 of 1977]
- Natal Town Planning Ordinance [No. 27 of 1949]
- Occupational Health and Safety Act [No. 85 of 1993]

- KwaZulu-Natal Planning and Development Act [No. 5 of 1998]
- Water Services Act [No. 108 of 1997]

Financial Management:

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

Human Resource Management:

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

Appendix C: Copy of Nkandla Forest Complex proclamation

KWAZULU GOVERNMENT NOTICE NO. 18 OF 1992
ESTABLISHMENT OF THE DHLABE NATURE RESERVE IN THE DISTRICT OF NKANDHLA, KWAZULU.

By virtue of the powers vested in me by section 29 (1) of the KwaZulu Nature Conservation Act, 1978 (Act 8 of 1978), as amended, I, Mangosuthu Gatsha Buthelezi, Minister of Economic Affairs, hereby determine that the area defined by the accompanying Schedule be known as a nature reserve and that the name Dhlabe Nature Reserve be assigned to the said area.

Government Notice No. 902 dated 30 April 1948 is hereby repealed.

M.G. BUTHELEZI
MINISTER OF ECONOMIC AFFAIRS

SCHEDULE

DESCRIPTION OF DHLABE NATURE RESERVE

Commencing from a cairn of heaped stones (called Beacon No. 1) on a ridge on the west side of the Dhlabe stream near the confluence of the Dhlabe and Hlabatini streams, and proceeding in a north-easterly direction in a straight line for approximately 225 yards to a cairn of heaped stones (called Beacon No. 2); thence in an east south-easterly direction in a straight line for approximately 1248 yards to a cairn of heaped stones (called Beacon No. 3); thence in a south south-westerly direction in a straight line for approximately 275 yards to a cairn of heaped stones (called Beacon No. 4); thence a west north-westerly direction in a straight line for approximately 1553 yards to the point of commencement.

KWAZULU GOEWERMENTSKENNISGEWING NR. 18 VAN 1992
VERKLARING VAN DIE DHLABE NATUURRESERVAAT IN DIE NKANDHLA DISTRIK.

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

Goewermentskennisgewing Nr. 902 van 30 April 1948 word hiermee herroep.

M.G. BUTHELEZI
MINISTER VAN EKONOMIESE SAKE

BYLAE

BESKRYWING VAN DIE DHLABE NATUURESERVAAT

Vanaf 'n klipstapel (genoem Baken No. 1) op 'n rant ten weste van die Dhlabestroom naby die samevloeiing van die Dhlabe en Hlabatinistroom, en verder in 'n noordoostelike rigting met 'n reguitlyn vir ongeveer 225 tree tot by 'n klipstapel (genoem Baken Nr. 2); vandaar in 'n oos-suidoostelike rigting met 'n reguitlyn vir ongeveer 1248 trec tot by 'n klipstapel (genoem Baken Nr. 3); vandaar in 'n suid-suid westelike rigting met 'n reguitlyn vir ongeveer 1553 tree tot by eersgenoemde punt.

2

KWAZULU GOVERNMENT NOTICE No. 45 OF 1992

ESTABLISHMENT OF THE EDODWENI NATURE RESERVE IN THE DISTRICT OF NKANDLA, KWAZULU.

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

Government Notice No. 902 dated 30 April 1948 is hereby repealed.

M.G. BUTHELEZI
MINISTER OF ECONOMIC AFFAIRS

SCHEDULE

DESCRIPTION OF EDODWENI NATURE RESERVE

Commencing from a cairn of heaped stones (called Beacon No. 1) on a ridge of the western side of the Dlabe stream near the confluence of the Dlabe and Hlabathini streams and proceeding in a north-westerly direction in a straight line for approximately 2300 yards to a cairn of heaped stones (called Beacon No.2) on top of the Dlodla mountain; thence in a north-easterly direction to a cairn of heaped stones (called Beacon No. 3); thence in an easterly direction in a straight line for approximately 210 yards to a cairn of heaped stones (called Beacon No. 4); thence in a south-easterly direction in a straght line for approximately 425 yards to a cairn of heaped stones (called Beacon No. 5); thence in a south-westerly direction in a straight line for approximately 475 yards to a cairn of heaped stones (called Beacon No. 6); thence in a south westerly direction for approximately 655 yards to the point of commencememnt.

Approximately 250 Acres.

KWAZULU GOEWERMENTSKENNISGEWING Nr. 45 VAN 1992

VERKLARING VAN DIE EDODWENI NATUURRESERVAAT IN DIE NKANDLA DISTRIK, KWAZULU

Kragtens die bevoegdheid aan my verleen deur artikel 29 (1) van die KwaZulu Natuurbewaringswet, 1975 (Wet 8 van 1975) soos gewysig, verklaar ek, Mangosuthu Gatsha Buthelezi, Minister van Ekonomiese Sake, hiermee die gebied soos omskryf in die bygaande Bylae as 'n Natuurreservaat aan genoemde natuurreservaat toegeken.

Goewermentskennisgewing Nr. 902 van 30 April 1948 word hiermee herroep.

M.G. BUTHELEZI
MINISTER VAN EKONOMIESE SAKE.

BYLAE

BESKRYWING VAN EDODWENI NATUURRESERVAAT

Vanaf 'n klipstapel (genoem Baken No. 1) op 'n rant ten weste van die Dlabestroom naby die samevloeiing van die Dlabe en Hlabatinistroom en verder in 'n noord-noordwestelike rigting met 'n reguitlyn vir ongeveer 2300 tree tot by 'n klipstapel (genoem Baken No. 2) op die kruin van Dlodlaberg; vandaar in 'n noordoostelike rigting met 'n reguitlyn vir ongeveer 720 tree langs 'n hoë rant tot by 'n klipstapel (genoem Baken No. 3); vandaar in 'n oostelike rigting met 'n reguitlyn vir ongeveer 210 tree tot by 'n klipstapel (genoem Baken No. 4); vandaar in 'n suidoostelike rigting met 'n reguitlyn vir ongeveer 475 tree tot by 'n klipstapel (genoem Baken No. 6); vandaar in 'n suidwestelike rigting met 'n reguitlyn vir ongeveer 655 tree tot by eersgenoemde punt.

Ongeveer 250 akker.

2

KWAZULU GOVERNMENT NOTICE No. 46 OF 1992

ESTABLISHMENT OF THE MNDUNDUZELI NATURE RESERVE IN THE DISTRICT OF NKANDLA, KWAZULU.

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

Government Notice No. 902 dated 30 April 1948 is hereby repealed.

M.G. BUTHELEZI
MINISTER OF ECONOMIC AFFAIRS

SCHEDULE

DESCRIPTION OF MNDUNDUZELI NATURE RESERVE

Commencing from a cairn of heaped stones (called Beacon No. 1) on the Mndunduzeli ridge and proceeding in a north-easterly direction in a straight line for approximately 220 yards along the ridge to a cairn of heaped stones (called Beacon No. 2); thence in a north-easterly direction in a straight line for approximately 975 yards to a cairn of heaped stones (called Beacon No. 3); thence in a south easterly direction in a straight line for approximately 250 yards down the southern slope of Mndunduzeli ridge to a cairn of heaped stones (called Beacon No. 4); thence in a south-westerly direction in a straight line for approximately 150 yards to a cairn of heaped stones (called Beacon No. 5); thence in a north-westerly direction for approximately 105 yards to a cairn of heaped stones (called Beacon No. 6); thence in a south westerly direction in a straight line for approximately 730 yards to a cairn of heaped stones (called Beacon No. 7); thence in a north-westerly direction in a straight line up a slope, for approximately 175 yards to the point of commencement.

Approximately 350 Acres.

KWAZULU GOEWERMENTSKENNISGEWING Nr. 46 VAN 1992

VERKLARING VAN DIE MNDUNDUZELI NATUURRESERVAAT IN DIE NKANDLA DISTRIK, KWAZULU

Kragtens die bevoegdheid aan my verleen deur artikel 29 (1) van die KwaZulu Natuurbewaringswet, 1975 (Wet 8 van 1975) soos gewysig, verklaar ek, Mangosuthu Gatsha Buthelezi, Minister van Ekonomiese Sake, hiermee die gebied soos omskryf in die bygaande Bylae as 'n natuurreservaat en word die naam Mndunduzeli natuurreservaat toegeken.

Goewermentskennisgewing Nr. 902 van 30 April 1948 word hiermee herroep.

M.G. BUTHELEZI
MINISTER VAN EKONOMIESE SAKE.

BYLAE

BESKRYWING VAN MNDUNDUZELI NATUURRESERVAAT

Vanaf 'n klipstapel (genoem Baken No. 1) op Mndunduzelirant en verder in 'n noordoostelike rigting met 'n reguitlyn vir ongeveer 220 tree langs die rant tot by 'n klipstapel (genoem Baken No. 2); vandaar in 'n noordoostelike rigting met 'n reguitlyn vir ongeveer 975 tree tot by 'n klipstapel (genoem Baken No. 3); vandaar in 'n suid-suidoostelike rigting met 'n reguitlyn vir ongeveer 250 tree teen die suidelike helling van die Mndunduzelirant af tot by 'n klipstapel (genoem Baken No. 4); vandaar in 'n suidwestelike rigting met 'n reguitlyn vir ongeveer 150 tree tot by 'n klipstapel (genoem Baken No. 5); vandaar in 'n noordwestelike rigting met 'n reguitlyn vir ongeveer 105 tree tot by 'n klipstapel (genoem Baken No. 6); vandaar in 'n suidwestelike rigting met 'n reguitlyn vir ongeveer 730 tree tot by 'n klipstapel (genoem Baken No. 7); vandaar in 'n noordwestelike rigting met 'n reguitlyn teen 'n helling op, vir ongeveer 175 tree tot by eersgenoemde punt.

Ongeveer 350 Akker.

2

(esibizwa ngokuthi IsiKhonkwane No. 11); ukusuka lapho ngaseNingizimu-Ntshonalanga ngomugqa oqondile ibanga elingamayadi acishe abengu-3,530 siwelele lapho isihosha saseMome siphela khona ngenhla, siqonde esivivaneni esingaphesheya (esibizwa ngokuthi IsiKhonkwane No. 12); ukusuka lapho sibheka ngaseNtshonalanga kwaseNingizimu-Ntshonalanga ngomugqa oqondile ibanga elingamayadi acishe abengu-400 siqonde endaweni lapho siqala khona. Singama eka acishe abengu-1,500.

KWAZULU GOVERNMENT NOTICE NO. 16 OF 1992
ESTABLISHMENT OF THE MOME NATURE RESERVE IN THE DISTRICT OF NKANDHLA, KWAZULU.

By virtue of the powers vested in me by section 29 (1) of the KwaZulu Nature Conservation Act, 1978 (Act 8 of 1978), as amended, I, Mangosuthu Gatsha Buthelezi, Minister of Economic Affairs hereby determine that the area defined by the accompanying Schedule be known as a nature reserve and that the name Mome Nature Reserve be assigned to the said area.

Government Notice No. 902 dated 30 April 1948 is hereby repealed.

M.G. BUTHELEZI
MINISTER OF ECONOMIC AFFAIRS

SCHEDULE

DESCRIPTION OF MOME NATURE RESERVE

Commencing from a cairn of heaped stones (called Beacon No. 1) at Beacon No. 4 of the Nkandhla Government Forest Reserve, and proceeding in a north-westerly direction and straight line across the Mome stream to a cairn of heaped stones (called Beacon No. 2) approximately 2,320 yards; thence in an east north-easterly direction in a straight line for approximately 230 yards to a cairn of heaped stones (called Beacon No. 3); thence in a northerly direction in a straight line for approximately 275 yards long a high ridge to yet another cairn of heaped stones (called Beacon No. 4); thence in a westerly direction in a straight line for approximately 225 yards to a cairn of heaped stones (called Beacon No. 5); thence in a northerly direction in a straight line for approximately 570 yards to a cairn of heaped stones (called Beacon No. 6); thence in a east north-easterly direction in a straight line for approximately 440 yards to a cairn of heaped stones (called Beacon No. 7), thence in an east south-easterly direction in a straight line approximately 355 yards along the top of a high mountain to a cairn of heaped stones (called Beacon No. 8); thence in a south-easterly direction in a straight line for approximately 205 yards to a cairn of heaped stones (called Beacon No. 9); thence in a south-westerly direction in a straight line down the slope of a mountain for approximately 510 yards to a cairn of heaped stones (called Beacon No. 10); thence in an east south-easterly direction in a straight line up the slope of a mountain for approximately 2,178 yards to a cairn of heaped stones on the top of a mountain (called Beacon No. 11); thence in a south-westerly direction in a straight line for approximately 3,530 yards across the upper end of the Mome gorge to a cairn of heaped stones on the opposite side (called Beacon No. 12); thence in a west south-westerly direction in a straight line for approximately 400 yards to the point of commencement. Approximately 1,500 acres.

KWAZULU GOEWERMENTSKENNISGEWING NR. 16 VAN 1992
VERKLARING VAN DIE MOME NATUURRESERVAAT IN DIE NKANDHLA DISTRIK.

Kragtens die bevoegdheid aan my verleen deur artikel 29 (1) van die KwaZulu Natuurbewaringswet, 1975 (Wet 8 van 1975) soos gewysig, bepaal ek, Mangosuthu G. Buthelezi, Minister van Ekonomiese Sake, hiermee dat die gebied soos omskryf in bygaande Bylae as 'n natuurreservaat verklaar word en dat die naam Mome Natuurreservaat aan genoemde natuurreservaat toegeken word.

Goewermentskennisgewing Nr. 902 van 30 April 1948 word hiermee herroep.

M.G. BUTHELEZI
MINISTER VAN EKONOMIESE SAKE

2

KWAZULU GOVERNMENT NOTICE NO. 37 OF 1992
ESTABLISHMENT OF THE NKANDLA FOREST RESERVE, NKANDLA DISTRICT, KWAZULU

Under and by virtue of the powers vested in me by section 29 (1) of the KwaZulu Nature Conservation Act, 1975 (Act 8 of 1975) as amended, I, Mangosuthu Gatsha Buthelezi, Minister of Economic Affairs, hereby determine that the area defined by the accompanying diagram (S.G. No. 1495/1981) and supporting Schedule be known as a nature reserve and that the name Nkandla Forest Reserve be assigned to the said area.

Government Notice No. 318 of 1 March 1918 is hereby repealed.

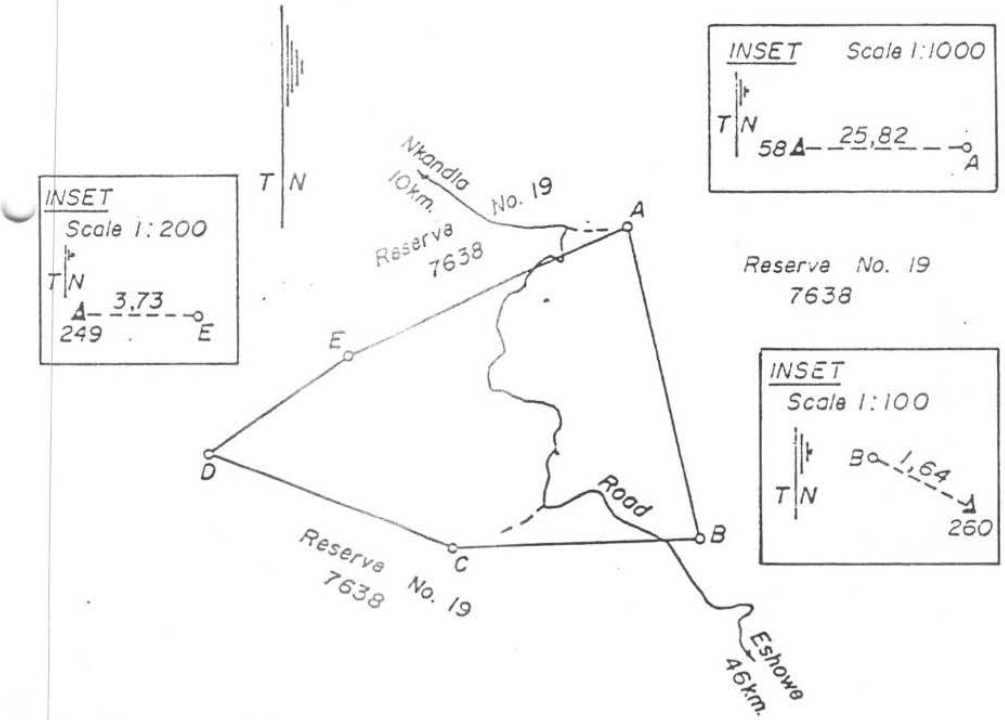
M.G. BUTHELEZI
MINISTER OF ECONOMIC AFFAIRS

SCHEDULE

DESCRIPTION OF NKANDLA FOREST RESERVE

Beginning at Beacon A on diagram S.G. No. 1495/1981; thence along the boundaries of the diagram as indicated, through Beacons B C D E, and returning to A; covering an area of 2216,9520 hectares; situated on Reserve 19 No. 7638.

SIDES METRES		DIRECTIONS	CO-ORDINATES SYSTEM LO 31° Y		CO-ORDINATES SYSTEM LO 31° X	S.G. No. 1495/1981
		Constant		+/- 0,00	3100 000 000	Approved
AB	4924,47	346.45.05	A	-15 065,49	+ 76 408,26	
BC	3933,15	88.57.41	B	-16 194,07	+ 81 201,65	
CD	4110,69	111.17.43	C	-12 261,57	+ 81 272,96	
DE	2631,92	235.27.23	D	- 8 431,55	+ 79 780,07	Surveyor-General 1982/01/27
EA	4845,39	247.10.39	E	-10 599,44	+ 78 287,68	
			Trig Beacons		(Degree Square 2831)	
			Δ 58	-15 039,67	+ 76 408,37	
			Δ249	-10 595,71	+ 78 287,65	
			Δ260	-16 195,61	+ 81 202,22	



3

BEACON DESCRIPTIONS

A..... Iron standard & cairn

B..... 15mm drill hole in rock on concrete/rock cairn

D ..... Iron standard in concrete & cairn

C, E ..... 30mm iron pipe & cairn

SCALE 1:100 000

The figure A B C D E represents 2216,9520 Hectares of land being

NKANDLA FOREST No. 15439

situate in the County of Zululand *Province of Natal*

Surveyed in February 1981

by me (H.B. Isherwood) Land Surveyor

This diagram relates to:	The original diagram is:	File No. 15439 S.R. No. 500/1981 Compilation GU-5C Degree Sheet 42
No.	*No.*	
Registrar of Deeds:	Transfer/Grant: No.	

4

KWAZULU GOVERNMENT NOTICE NO. 17 OF 1992
ESTABLISHMENT OF THE SIBUDENI NATURE RESERVE IN THE DISTRICT OF NKANDHLA, KWAZULU

By virtue of the powers vested in me by section 29 (1) of the KwaZulu Nature Conservation Act, 1978 (Act 8 of 1978) as amended, I, Mangosuthu Gatsha Buthelezi, Minister of Economic Affairs, hereby determine that the area defined by the accompanying Schedule be known as a nature reserve and that the name Sibudeni Nature Reserve be assigned to the said area.

Government Notice No. 902 dated 30 April 1948 is hereby repealed.

M.G. BUTHELEZI
MINISTER OF ECONOMIC AFFAIRS

SCHEDULE

DESCRIPTION OF SIBUDENI NATURE RESERVE

Commencing from a cairn of heaped stones (called Beacon No. 1) at Beacon No. 1 of the Nkandhla Government Forest Reserve, and proceeding in a south-westerly direction in a straight line across the Nkandhla-Eshowe main road to a cairn of heaped stones (called Beacon No. 2) for approximately 1,200 yards; thence in a westerly direction in a straight line for approximately 200 yards to a cairn of heaped stones (called Beacon No. 3); thence in a north-westerly direction in a straight line for approximately 500 yards to a cairn of heaped stones (called Beacon No. 4); thence in a northerly direction in a straight line for approximately 300 yards to a cairn of heaped stones (called Beacon No. 5); thence in a north north-easterly direction in a straight line for approximately 1,000 yards across the Halambu stream to a cairn of heaped stones, on the top of a high ridge (called Beacon No. 6); thence in an easterly direction in a straight line for approximately 475 yards along the top of a ridge to a cairn of heaped stones at Beacon No. 5 of the Nkandhla Government Forest Reserve (called Beacon No. 7); thence in a south-easterly direction in a straight line for approximately 525 yards, following the Government Forest Reserve boundary to the point of commencement. Approximately 500 acres.

KWAZULU GOEWERMENTSKENNISGEWING NR. 17 VAN 1992
VERKLARING VAN DIE SIBUDENI NATUURRESERVAAT IN DIE NKANDHLA DISTRIK.

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

Goewermentskennisgewing Nr. 902 van 30 April 1948 word hiermee herroep.

M.G. BUTHELEZI
MINISTER VAN EKONOMIESE SAKE

BYLAE

BESKRYWING VAN DIE SIBUDENI NATUURESERVAAT

Vanaf 'n klipstapel (genoem Baken No. 1) van die Nkandhla se Regeringsbosreserwe, en verder in 'n suid-suidwestelike rigting met 'n reguitlyn dwarsoor die Nkandhla-Eshowe hoofpad tot by 'n klipstapel (genoem Baken No. 2) vir ongeveer 1,200 tree; vandaar in 'n westelike rigting met 'n reguitlyn vir ongeveer 200 tree tot by 'n klipstapel (genoem Baken No. 3); vandaar in 'n noordwestelike rigting met 'n reguitlyn vir ongeveer 500 tree tot by 'n klipstapel (genoem Baken No. 4); vandaar in 'n noordelike rigting met 'n reguitlyn vir ongeveer 300 tree tot by 'n klipstapel (genoem Baken No. 5); vandaar in 'n noord-noordoostelike rigting met 'n reguitlyn vir ongeveer 1,000 tree oor die Halambustroom tot by 'n klipstapel op die kruin van 'n hoe rant (genoem Baken No. 6); vandaar in 'n oostelike rigting met 'n reguitlyn vir ongeveer 475 tree langs die kruin van die rant tot by 'n klipstapel (genoem Baken No. 5) van die Nkandhla se Regeringsbosreserwe (Baken No. 7); vandaar in 'n suidoostelike rigting met 'n reguitlyn vir ongeveer 525 tree, al langs die grens van die Regeringsbosreserwe tot by eersgenoemde punt. Ongeveer 500 acres.

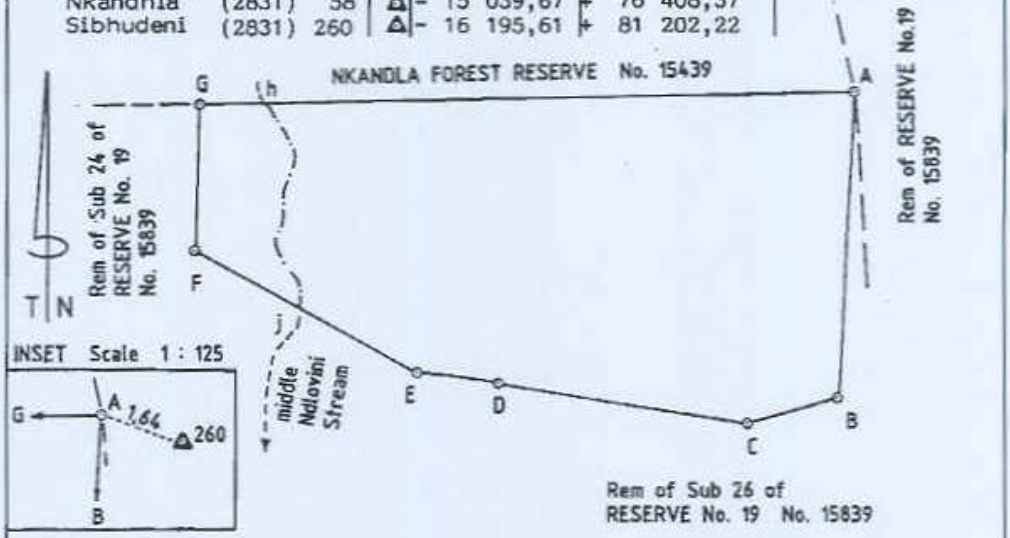
2

CONSOLIDATION DIAGRAM

SIDES METRES		DIRECTIONS	CO-ORDINATES Y SYSTEM Lo 31° X		
		Constants	±	0,00	+3100 000,00
AB	754,47	3 41 40	A	- 16 194,07	+ 81 201,65
BC	215,46	73 09 10	B	- 16 145,46	+ 81 954,55
CD	625,18	99 11 20	C	- 15 939,25	+ 82 016,99
DE	181,55	98 27 30	D	- 15 322,09	+ 81 917,16
EF	610,26	119 25 50	E	- 15 142,52	+ 81 890,45
FG	360,39	181 23 30	F	- 14 611,02	+ 81 590,58
GA	1574,57	268 57 30	G	- 14 619,76	+ 81 230,29
	Nkandhla	(2831) 58	△	- 15 039,67	+ 76 408,37
	Sibhudeni	(2831) 260	△	- 16 195,61	+ 81 202,22

S.G. No. 1195/1994

Approved
R. M. Steer
for Surveyor-General
13-6-1995



BEACON DESCRIPTION

A : 15mm drill hole in rock on concrete/rock cairn
B D E F : Iron standard in round concrete base
C : Iron standard
G : 20mm Iron peg

COMPONENTS

1. The figure ABCDEj middle of the Ndlovini Stream h represents Sub 35 (of 26) of Reserve No. 19 No. 15839. Vide Diagram S.G. No. 1193/1994 and
2. The figure Gh middle of the Ndlovini Stream jF represents Sub 36 (of 24) of Reserve No. 19 No. 15839. Vide Diagram S.G. No. 1194/1994 and

SCALE: 1 : 15000

The figure A B C D E F G

represents 104,0506 Hectares 19 *of land, being*
Sub 37 of RESERVE NO. ~~26~~ NO. 15839
and comprises the properties 1 and 2 quoted above

situate in the *Administrative District and Province of Natal.*

surveyed in March 1994

by me S.E. Lauterbach *Professional Land Surveyor*

This diagram relates to No. *Registrar of Deeds*

The original diagram is No. *Transfer/Grant* No.

File No. 15839
S.R. No. 476/1994
Comp. GUSL
Degree Sheet

Buffalo Press 2948-04/89-KOS

KWAZULU GOVERNMENT NOTICE NO. 19 OF 1992
ESTABLISHMENT OF THE VUNGWINI NATURE RESERVE IN THE DISTRICT OF NKANDHLA, KWAZULU.

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

Government Notice No. 902 dated 30 April 1948 is hereby repealed.

M.G. BUTHELEZI
MINISTER OF ECONOMIC AFFAIRS

SCHEDULE

DESCRIPTION OF VUNGWINI NATURE RESERVE

Commencing from a cairn of heaped stones (called Beacon No. 1) at Beacon No. 2 of the Nkandhla Government Forest Reserve, and proceeding in a east south-easterly direction in a straight line along a high ridge to a cairn of heaped stones (called Beacon No. 2) approximately 1,535 yards; thence in a west south-westerly direction in a straight line for approximately 525 yards to a cairn of heaped stones (called Beacon No. 3); thence in a south-westerly direction in a straight line for approximately 1,840 yards to a cairn of heaped stones (called Beacon No. 4); thence in a west south-westerly direction in a straight line for approximately 150 yards down the southern slope of a mountain to a cairn of heaped stones (called Beacon No. 5); thence in a west north-westerly direction in a straight line for approximately 1,255 yards across the Vungwini stream to a cairn of heaped stones at a point on the eastern boundary of the Nkandla Government Forest Reserve (called Beacon No. 6); thence in a north-easterly direction in a straight line for approximately 3,260 yards continuing along the Government Forest Reserve boundary to the point of commencement. Approximately 1,000 acres.

KWAZULU GOEWERMENTSKENNISGEWING NR. 19 VAN 1992
VERKLARING VAN DIE VUNGWINI NATUURRESERVAAT IN DIE NKANDHLA DISTRIK, KWAZULU

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

Goewermentskennisgewing Nr. 902 van 30 April 1948 word hiermee herroep.

M.G. BUTHELEZI
MINISTER VAN EKONOMIESE SAKE

BYLAE

BESKRYWING VAN DIE VUNGWINI NATUURESERVAAT

Vanaf 'n klipstapel (genoem Baken No. 1) by Baken Nr. 2 van die Nkandhla se Regeringsbosreserwe, en verder in 'n oos-suidoostelike rigting met 'n reguitlyn langs die hoë rant tot by 'n klipstapel (genoem Baken Nr. 2) ongeveer 1,535 tree en vandaar in 'n wes-suidwestelike rigting met 'n reguitlyn vir ongeveer 525 tree tot by 'n klipstapel (genoem Baken Nr. 3); vandaar in 'n suid-suidwestelike rigting met 'n reguitlyn vir ongeveer 1,840 tree tot by 'n klipstapel (genoem Baken Nr. 4); vandaar in 'n wes-suidwestelike rigting met 'n reguit lyn vir ongeveer 150 tree teen die suidelike helling van die berg af tot by 'n klipstapel (genoem Baken Nr. 5); vandaar in 'n wes-noordwestelike rigting met 'n reguitlyn vir ongeveer 1,255 tree dwarsoor die Vungwinistroom tot by 'n klipstapel by 'n punt op die oostelike grens van die Nkandhla se Regeringsbosreserwe (genoem Baken Nr. 6); vandaar in 'n noord-noordoostelike rigting met 'n reguitlyn vir ongeveer 3,260 tree verder langs die Regeringsbosreserwegrens tot by eersgenoemde punt. Ongeveer 1,000 acres.

2

Appendix D: List of policies, unpublished documents and supporting documentation

Copies available from:

a) Reserve Management and / or,

b) Regional Ecologist

Item:

1. Ezemvelo KZN Wildlife Corporate Strategic Plan and Performance Plan for 2015 - 2020.
2. Ezemvelo KZN Wildlife Corporate Policies and Procedures (Norms & Standards) listed in the table below.
3. Ezemvelo KZN Wildlife Biodiversity Database Checklists for Nkandla Forest Complex.
4. Proclamations of Nkandla Forest Complex
5. Nkandla Forest Complex Public Participation Report, May 2015.

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

EZEMVELO KZN WILDLIFE POLICIES (NORMS & STANDARDS)	
File No.	**CORPORATE AFFAIRS**
B 2	➢ Access to Ezemvelo KZN Wildlife Areas and Employment.
B 5	➢ Outsourcing of Functions and Services
B 7	➢ Monuments, Memorials and Names of Protected Areas under the control of Ezemvelo KZN Wildlife.
B 8	➢ Restricted use of Board Theatres, Halls and Conference Facilities etc.
B 9	➢ Code of Ethics / Conduct.
B 10	➢ Photography in Board Protected Areas.
B 13	➢ Mission Statement
B 14	➢ Access to Information.
File No.	**INTERNAL AUDIT**
C 5	➢ Management Control
	BIODIVERSITY CONSERVATION OPERATIONS
	1. NATURAL RESOURCE SUSTAINABILITY
File No.	**Threatened Species and Ecosystems**
D 1.1	➢ Disposal of Black Rhino.
D 1.2	➢ Disposal of Surplus White Rhino.
D 1.3	➢ Strategy for the Management of Southern White Rhino in KwaZulu-Natal.
D 1.4	➢ Strategy for the Biological Management of Black Rhino in KwaZulu-Natal.
D 1.5	➢ Rhinoceros Products.
D 1.6	➢ Crocodilians
D 1.7	➢ Cycads.
D 1.8	➢ Disposal of Threatened Species.
	BIODIVERSITY CONSERVATION OPERATIONS
	1. NATURAL RESOURCE SUSTAINABILITY
File No.	**Exotic and Invasive Species**
D 1.9	➢ Release of Alien Species.
D 1.10	➢ Control Measures for Red-billed Quelea.
D 1.12	➢ Grass Carp.

D 1.13	➢ Establishment of Alien Plantations.
File No.	**Migratory Species**
D 1.14	➢ Black Wildebeest and Blue Wildebeest Hybridization and Conservation.
D 1.15	➢ Permit authorising the collection of Biological Material within Board Areas.
	2. CONSERVATION EFFECTIVENESS
File No.	**Strategic Applications**
D 2.1	➢ Involvement of the KwaZulu-Natal Nature Conservation Board in Project 8 of the MAB (Man and Biosphere) Programme.
File No.	**Conservation Management: Protected Area Management**
D 2.2	➢ Management of Wilderness Areas.
D 2.3	➢ Protected Area Development.
D 2.4	➢ Prohibition of Works and Servitudes in Board Areas.
D 2.5	➢ Zonation and Regulations for the control of off-road vehicles on beaches controlled by the Board.
D 2.6	➢ Quarries in KZN Protected Areas.
D 2.7	➢ Re-establishment and Management of Vegetation on Development Sites in the Ezemvelo KZN Wildlife Protected Areas.
D 2.8	➢ Ecotourism and Protected Areas.
D 2.9	➢ Solid Waste Management within Protected Areas.
D 2.10	➢ State Security Service Activities within Board Areas.
D 2.11	➢ Shark Nets in or bordering KwaZulu-Natal Nature Conservation Board Controlled Areas.
File No.	**Integrated Environmental Management**
D 2.12	➢ Integrated Environmental Management - incorporating the procedure for the assessment of the impact of proposed development projects on nature conservation concerns.
D 2.13	➢ Precautionary Principle.
D 2.14	➢ Shark Net Installations.
D 2.15	➢ Bioprospecting in KwaZulu-Natal.
D 2.17	➢ Use of Pesticides by the Ezemvelo KZN Wildlife: Safety to Humans and the Environment.
D 2.18	➢ Interference with the Mouth of a Lagoon or River (Breaching).
File No.	***Ex Situ* Wild Animal Management**
D 2.21	➢ Re-establishment of Terrestrial Mammals in Board Areas.
D 2.22	➢ Translocation of Animals.
D 2.25	➢ Elephant Introductions and Elephant in Enclosures.
D 2.27	➢ Introduction and Keeping of Large Predators in Enclosures in KZN.
D 2.28	➢ Use of Narcotic Drugs.
D 2.29	➢ Falconry.
	BIODIVERSITY CONSERVATION OPERATIONS
	2. CONSERVATION EFFECTIVENESS
File No.	**Human Animal Conflict - Inside and Outside Protected Areas**
D 2.30	➢ Disposal of Leopard from Ezemvelo KZN Wildlife Protected Areas.
D 2.31	➢ Problem Animal Control.
D 2.32	➢ Compensation claims in respect of damage caused by Lion, Cheetah, Wild Dog and Elephant to Stock and Crops.

D 2.33	➢ Instances of Death as a result of an Unprovoked Attack by a Wild Animal Normally contained and originating from within a Fenced Protected Area under the Control of the KwaZulu-Natal Nature Conservation Board.
File No.	**Environmental Awareness**
D 2.34	➢ Environmental Education Policy.
	3. BIODIVERSITY PROTECTION
File No.	**Co-management**
D 3.1	➢ Supply of Game to Conservancies, Community Conservation Areas and Biosphere Reserves in KwaZulu-Natal
D 3.2	➢ Establishment and Management of Community Conservation Reserves (CCR)
D 3.4	➢ Community Conservation Programmes
D 3.5	➢ Neighbours' Access to Board Protected Areas
D 3.6	➢ Relationship with Local Boards
D 3.7	➢ Conservation Partnerships Between KwaZulu-Natal Nature Conservation Board and Adjacent Landowners
D 3.8	➢ Community Trust
D 3.9	➢ Community Levy Policy and Guidelines
D 3.10	➢ Land Claims on Proclaimed and Unproclaimed Provincial and Assigned National Protected areas in KwaZulu-Natal
D 3.11	➢ Amafa Policy Guidelines for the access of rock art sites in KwaZulu Natal
File No.	**Resource-use benefits**
D 3.12	➢ Disposal of Venison from Ezemvelo KZN Wildlife Management Operations.
D 3.13	➢ Sustainable use of wildlife resources.
D 3.14	➢ Freshwater Angling.
D 3.15	➢ Freshwater species utilisation.
D 3.16	➢ Use of plant resources from protected areas.
D 3.17	➢ Use of doomed biological material.
D 3.19	➢ Provision of hunting by Ezemvelo KZN Wildlife.
File No.	**4. RELATIONSHIPS**
D 4.1	➢ Neighbour Relations.
D 4.2	➢ Participation - Non Government Organisations.
D 4.3	➢ Data Access.
D 4.4	➢ Consultation and Communication with Stakeholders: Policy and Guidelines.
File No.	**COMMERCIAL OPERATIONS**
E 1	➢ Concessions for Welfare Groups.
E 2	➢ Hiking and Mountaineering.
E 3	➢ Educational Concessions.
E 4	➢ Club Facilities within Board Areas.
E 5	➢ Hutted Camps.
E 6	➢ Joint Venture Scheme.
E 7	➢ Allocation of Sites in terms of the Joint Venture Scheme.
E 8	➢ Access to Protected Areas through Unofficial Entry Points.
E 9	➢ Visitor Facilities Management by Ezemvelo KZN Wildlife.
E 10	➢ Lease of Lakeshore at State Dam Protected Areas.
E 11	➢ Execution, Control and Management of Leases and Concession Contracts (excluding Biodiversity Conservation Partnerships and Leases of Wildlife).
E 12	➢ Private Sector Reservations Policy.

E 13	➢ Partnerships for Eco-Tourism Development within or Adjacent to Protected Areas.
E 14	➢ Discounting of Tariffs for Walk-in Guests.
E 15	➢ Ecotourism Discounting Strategy.
E 16	➢ Travel Trade Commissions: Tour Operator/ Travel Agency.
E 17	➢ Policy and Procedure for the establishment and monitoring of Commercial Operations Public Private Partnership (PPP) Agreements.
E 18	➢ Administrative and operational policy on Professional hunting in South Africa.
E 19	➢ Commercialisation.

Appendix E: Listed activities in terms of Regulation R.546, Listing Notice 3

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

- The construction of billboards exceeding 18 square metres in size.
- The construction of reservoirs for bulk water supply with a capacity of more than 250m3.
- The construction of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast:
- Is to be placed on a site not previously used for this purpose.
- Will exceed 15 metres in height but excluding attachments to existing buildings and masts on rooftops.
- The construction of a road wider than four metres with a reserve less than 13.5 metres.
- The construction of resorts, lodges or other tourism accommodation facilities.
- The conversion of existing structures to resorts, lodges or tourism accommodation facilities that sleep 15 people or more.
- The construction of aircraft landing strips and runways.
- The construction of above ground cableways and funiculars.
- The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good.
- The construction of tracks or routes for the testing, recreational use or outdoor racing of motor powered vehicles excluding conversion of existing tracks or routes for the testing, recreational use or outdoor racing of motor powered vehicles.
- The clearance of an area of 1ha or more of vegetation where 75% of the vegetative cover constitutes indigenous vegetation, except where such removal is required for:
- The undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), in which case the activity is regarded to be excluded from this list.
- The undertaking of a linear activity falling below the thresholds mentioned in Listing Notice 1 in terms of GN No.544 of 2010.
- The construction of facilities and infrastructure or structures of any size for any form of aquaculture (this applies only inside a protected area, not within five kilometres of it).
- The construction of:
    - Jetties exceeding 10m^2 in size.
    - Slipways exceeding 10m^2 in size.
    - Buildings with a footprint exceeding 10m^2 in size.
    - Infrastructure covering 10m^2 or more. Where such construction occurs within a watercourse or within 32 metres of watercourse, measured from the edge of the watercourse, excluding where such construction will occur behind the development setback line.

- The expansion of reservoirs for bulk water supply where the capacity will be increased by more than 250m^3.
- The expansion of a resort, lodge, hotel and tourism or hospitality facilities where the development footprint will be expanded.
- The widening of a road by more than four metres or the lengthening of a road by more than one kilometre.
- The expansion of runways or aircraft landing strips where the expanded runways or aircraft landing strips will be longer than 1.4 kilometres in length.
- The expansion of above ground cableways and funiculars where the development footprint will be increased.
- The expansions of tracks or routes for the testing, recreational use or outdoor racing of motor powered vehicles excluding conversion of existing tracks or routes for the testing, recreational use or outdoor racing of motor powered vehicles, where the development footprint will be expanded.
- The expansions of facilities or infrastructure for the storage, or storage and handling of a dangerous good.
- The expansion of:
    - Jetties where the jetty will be expanded by 10m^2 in size or more.
    - Slipways where the slipway will be expanded by 10m^2 or more.
    - Buildings where the buildings will be expanded by 10m^2 or more in size.
    - Infrastructure where the infrastructure will be expanded by 10m^2 or more.
    - Where such construction occurs within a watercourse or within 32 metres of watercourse, measured from the edge of the watercourse, excluding where such construction will occur behind the development setback line.
- The expansion of facilities, infrastructure or structures of any size for any form of aquaculture (this applies only inside a protected area, not within five kilometres of it).
- Phased activities for all activities listed in the Schedule and as it applies to a specific geographical area, which commenced on or after the effective date of the Schedule, where any phase off the activity may be below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold.

Appendix F: Nkandla Forest Complex Fauna Species lists

TaxonName	EnglishName
Amphibia	
Anhydrophryne hewitti	Natal Chirping Frog; Natal Moss Frog; Hewitt's Moss Frog
Arthroleptis wahlbergii	Bush Squeaker; Wahlberg's Frog; Wahlberg's Humus Frog
Hadromophryne natalensis	Natal Cascade Frog; Natal Ghost Frog
Arachnida	
Anyphops lycosiformis	
Anyphops stauntoni	
Caerostris sexcuspidata	
Cheiramiona silvicola	
Chiasmopes lineatus	
Clubiona citricolor	
Ctenus pulchriventris	
Cyrtophora citricola	
Foveosa foveolata	Foveolate wolf spider
Griswoldia zuluensis	
Merenius alberti	Albert's dark sac spider
Metabiantes leighi	
Microstigmata zuluensis	
Monaeses griseus	
Neoscona quincasea	
Neoscona subfusca	
Panaretella zuluana	Zululand large huntsman spider
Parapurcellia silvicola	Forest-loving mite harvestman
Pardosa crassipalpis	
Poecilomigas abrahami	
Quamtana ciliata	
Rhampsinitus leighi	
Scytodes constellata	
Scytodes rubra	
Trachelas roeweri	
Withius crassipes	
Xerophaeus zuluensis	
Aves	
Accipiter melanoleucus	Black sparrowhawk
Accipiter minullus	Little Sparrowhawk
Accipiter tachiro	African Goshawk
Andropadus importunus	Sombre Greenbul, Sombre Bulbul
Anthus leucophrys	Plain-backed Pipit
Anthus similis	Long-billed Pipit
Apalis flavida	Yellow-breasted Apalis
Apalis thoracica	Bar-throated Apalis
Apaloderma narina	Narina Trogon
Aplopelia larvata	Lemon Dove, Cinnamon Dove
Apus barbatus	African Black Swift, Black Swift
Apus caffer	White-rumped Swift
Ardea melanocephala	Black-headed Heron
Batis capensis	Cape Batis
Bostrychia hagedash	Hadeda Ibis
Bradypterus barratti	Barratt's Warbler

TaxonName	EnglishName
Bucorvus leadbeateri	Southern Ground-Hornbill, Ground Hornbill
Buteo rufofuscus	Jackal Buzzard
Buteo vulpinus	Steppe Buzzard
Bycanistes bucinator	Trumpeter Hornbill
Camaroptera brachyura	Green-backed Camaroptera, Bleating Warbler
Campethera abingoni	Golden-tailed Woodpecker
Cercotrichas signata	Brown Scrub-Robin, Brown Robin
Chlorocichla flaviventris	Yellow-bellied Greenbul, Yellow-bellied Bulbul
Chrysococcyx cupreus	African Emerald Cuckoo, Emerald Cuckoo
Cinnyris chalybeus	Southern Double-collared Sunbird, Lesser Double-collared Sunbird
Cisticola aberrans	Lazy Cisticola
Cisticola ayresii	Wing-snapping Cisticola, Ayres' Cisticola
Cisticola fulvicapilla	Neddicky
Cisticola juncidis	Zitting Cisticola, Fan-tailed Cisticola
Cisticola lais	Wailing Cisticola
Cisticola natalensis	Croaking Cisticola
Cisticola textrix	Cloud Cisticola
Coccopygia melanotis	Swee Waxbill
Colius striatus	Speckled Mousebird
Columba arquatrix	African Olive-Pigeon, Rameron Pigeon
Columba delegorguei	Eastern Bronze-naped Pigeon, Delegorgue's pigeon
Coracina caesia	Grey Cuckooshrike
Corvus albicollis	White-necked Raven
Corvus albus	Pied Crow
Cossypha caffra	Cape Robin-Chat, Cape Robin
Cossypha dichroa	Chorister Robin-Chat, Chorister Robin
Crithagra mozambicus	Yellow-fronted Canary, Yellow-eyed Canary
Crithagra scotops	Forest canary
Crithagra sulpuratus	Brimstone Canary, Bully Canary
Cuculus clamosus	Black Cuckoo
Cuculus solitarius	Red-chested Cuckoo
Cyanomitra olivacea	Olive Sunbird
Dendropicos griseocephalus	Olive Woodpecker
Dicrurus adsimilis	Fork-tailed Drongo
Dryoscopus cubla	Black-backed Puffback, Puffback
Elanus caeruleus	Black-shouldered Kite
Estrilda astrild	Common Waxbill
Euplectes axillaris	Fan-tailed Widowbird, Red-shouldered Widow
Falco biarmicus	Lanner falcon
Falco rupicolus	Rock Kestrel
Falco subbuteo	Eurasian Hobby, Hobby Falcon
Gallirex porphyreolophus	Purple-crested Turaco, Purple-crested Lourie
Hedydipna collaris	Collared Sunbird
Hirundo abyssinica	Lesser Striped Swallow
Hirundo fuligula	Rock Martin
Hirundo rustica	Barn Swallow, European Swallow
Indicator variegatus	Scaly-throated Honeyguide
Lagonosticta rubricata	African Firefinch, Blue-billed Firefinch
Lamprotornis corruscus	Black-bellied Starling
Laniarius ferrugineus	Southern Boubou

TaxonName	EnglishName
Lioptilus nigricapillus	Bush Blackcap
Macronyx capensis	Cape Longclaw, Orange-throated Longclaw
Macronyx croceus	Yellow-throated Longclaw
Milvus migrans	Black Kite,Yellow-billed Kite
Mirafra africana	Rufous-naped Lark
Muscicapa adusta	African Dusky Flycatcher, Dusky Flycatcher
Nectarinia famosa	Malachite Sunbird
Onychognathus morio	Red-winged Starling
Oriolus larvatus	Black-headed Oriole
Ortygospiza atricollis	African Quailfinch, Quail Finch
Phyllastrephus terrestris	Terrestrial Brownbul, Terrestrial Bulbul
Phylloscopus ruficapilla	Yellow-throated Woodland-Warbler, Yellow-throated Warbler
Ploceus bicolor	Dark-Backed Weaver, Forest Weaver
Pogoniulus pusillus	Red-fronted Tinkerbird, Red-fronted Tinker Barbet
Pogonocichla stellata	White-starred Robin, Starred Robin
Polemaetus bellicosus	Martial eagle
Polyboroides typus	African Harrier-Hawk, Gymnogene
Prinia hypoxantha	Drakensberg Prinia
Prinia subflava	Tawny-flanked Prinia
Psalidoprocne holomelaena	Black Saw-wing, Black Saw-wing Swallow
Pycnonotus tricolor	Dark-capped Bulbul, Black-eyed Bulbul
Saxicola torquatus	African Stonechat, Stonechat
Scleroptila shelleyi	Shelley's Francolin
Serinus canicollis	Cape Canary
Smithornis capensis	African Broadbill
Spermestes cucullatus	Bronze Mannikin
Sphenoeacus afer	Cape Grassbird, Grassbird
Stephanoaetus coronatus	African Crowned Eagle
Streptopelia semitorquata	Red-eyed Dove
Strix woodfordii	African Wood-Owl, Wood Owl
Tachymarptis melba	Alpine Swift
Tauraco corythaix	Knysna Turaco, Knysa Lourie
Tchagra senegalus	Black-crowned Tchagra
Telophorus olivaceus	Olive Bush-Shrike
Terpsiphone viridis	African Paradise-Flycatcher, Paradise Flycatcher
Tockus alboterminatus	Crowned Hornbill
Treron calvus	African Green-Pigeon, Green Pigeon
Trochocercus cyanomelas	Blue-mantled Crested-Flycatcher, Blue-mantled Flycatcher
Turdus olivaceus	Olive Thrush
Turtur tympanistria	Tambourine Dove
Zoothera gurneyi	Orange Ground-Thrush, Orange Thrush
Zosterops virens	Cape White-eye
Clitellata	
Acanthodrilid sp.	
Amynthas corticus	
Amynthas sp.	
Aporrectodea rosea	
Pheretima (complex)	
Proandricus babanango	Babanango earthworm
Tritogenia karkloofia	Karkloof earthworm
Tritogenia sp.	

TaxonName	EnglishName
Tritogenia tetrata	
Udeina nkandla	Nkandla balantine earthworm
Diplopoda	
Allawrencius complex	
Allawrencius nodulosus	
Allawrencius sp.	
Centrobolus bifidus	Bifid millipede
Centrobolus cf. bifidus	
Centrobolus fulgidus	Shining millipede
Centrobolus inscriptus	Inscribed millipede
Centrobolus ruber vulpinus	
Doratogonus krausi	Kraus's black millipede
Doratogonus peregrinus	Wandering black millipede
Doratogonus rattrayi	Rattray's black millipede
Doratogonus sp.	Black Millipede
Gnomeskelus hamuliger	
Gnomeskelus harpagonifer	
Gnomeskelus lawrencei	Lawrence's keeled millipede
Gnomeskelus natalicus	Natal keeled millipede
Gnomeskelus sp.	
Orthoporoides sp.	
Sphaerotherium sp.	
Spinotarsus silvarum	
Stenjulomorpha sp.	
Stenjulomorpha sp. nov.	
Ulodesmus denticulatus	
Ulodesmus lawrencei	
Ulodesmus sp.	
Gastropoda	
Cochlitoma granulata	Granular agate snail
Gulella crassidens	Fat-toothed hunter snail
Helix aspersa	Brown garden snail
Nata vernicosa	
Opeas florentiae	
Sheldonia leucospira	White-spired tail-wagger
Trachycystis haygarthi	Haygarth's pinwheel
Trachycystis placenta	Discus pinwheel
Trachycystis sp.	
Insecta	
Abantis bicolor	Bicoloured Skipper
Acanthocerodes martini	Martin's pill scarab beetle
Acorypha nigrovariegata tibialis	
Acraea boopis boopis	
Acraea cerasa cerasa	Tree-top Acraea
Acraea horta	Garden Acraea
Acraea natalica	Natal Acraea
Acraea neobule neobule	Wandering Donkey Acraea
Acraea nohara nohara	Light-red Acraea
Acraea violarum	Speckled Red Acraea
Actizera lucida	Rayed Blue
Afroxyrrhepes procera	

TaxonName	EnglishName
Amauris albimaculata albimaculata	Layman Friar
Amauris niavius dominicanus	Common Friar
Anacleora extremaria	
Aneilobolus sp. nov.	
Anthene definita definita	Common Hairtail
Appias epaphia contracta	Diverse White
Appias sabina phoebe	Albatross White
Arytropteris basalis	Basal shield-backed katydid
Aspitates illepidata	
Astictopterus inornatus	Modest Sylph
Azanus mirza	Mirza Blue
Azanus moriqua	Thorn-tree Blue
Belenois aurota aurota	Brown-veined White
Belenois creona severina	African Common White
Bibionid sp.	
Bicyclus safitza safitza	Common Bush Brown
Bittacus selysi	Selys's hanging fly
Bug sp.	
Cacyreus lingeus	Bush Bronze
Cacyreus marshalli	Common Geranium Bronze
Callioratis abraxas	
Capys alphaeus extentus	Orange-banded Protea-butterfly
Cassionympha cassius	Rainforest Brown
Catacroptera cloanthe cloanthe	Pirate
Catantops melanostictus	Black-dotted grasshopper
Catopsilia florella	African Migrant
Celaenorrhinus mokeezi mokeezi	Large Sprite
Charaxes brutus natalensis	White-barred Charaxes
Charaxes candiope	Green-veined Charaxes
Charaxes druceanus druceanus	Silver-barred Charaxes
Charaxes ethalion ethalion	Satyr Charaxes
Charaxes karkloof karkloof	Karkloof Charaxes
Charaxes varanes varanes	Pearl Charaxes
Charaxes xiphares penningtoni	Pennington's Forest-king Charaxes
Chelotephrina acorema	
Chiasmia confuscata	Confused peacock
Chiasmia normata	
Chiasmia separata	
Chloroclystis muscosa tumefacta	Lobed Shell
Cleora herbuloti	
Cleora munda	
Coeliades forestan forestan	Striped Policeman
Coeliades keithloa keithloa	
Coryphosima stenoptera	Narrow-winged grasshopper
Crucinotacris cruciata	
Cupidopsis cissus cissus	
Cymothoe alcimeda clarki	
Cymothoe alcimeda trimeni	Trimen's Battling Glider
Cymothoe coranus coranus	
Cyrtacanthacris tatarica tatarica	
Damalis femoralis	Spike-femured robberfly

TaxonName	EnglishName
Danaus chrysippus orientis	African Monarch
Dasophrys fortis	Strong robberfly
Dasophrys natalensis	Natal robberfly
Deloneura millari millari	Millar's Buff
Deudorix dariaves	Black-and-orange Playboy
Dirshia abbreviata	
Dixeia spilleri	Spiller's Sulphur Small White
Drepanogynis dukei	
Drepanogynis hypenissa	
Drepanogynis valida	
Dundocoris callani nodulicarinus	
Durbania amakosa amakosa	Amakosa Rocksitter
Eagris nottoana nottoana	Rufous-winged Flat
Elaterid sp.	
Elginus oriens	Eastern grassland leafhopper
Eremidium sp.	
Eriesthis fallax	Deceptive leaf chafer
Eriesthis guttata	Spotted leaf chafer
Eronia cleodora cleodora	Vine-leaf Vagrant
Eupagia valida	
Eupithecia irenica	
Eurema brigitta brigitta	Broad-bordered Grass Yellow
Eurema hecabe solifera	Common Grass Yellow
Eurytela dryope angulata	Golden Piper
Eurytela hiarbas angustata	Pied Piper
Faureia milanjica	Mulanje grasshopper
Fly sp.	
Gegenes niso niso	Common Hottentot Skipper
Graphium leonidas leonidas	Veined Swordtail
Gymnobothroides hemipterus	
Gymnobothrus temporalis temporalis	
Haematopota obscura	Obscure tabanid fly
Horisme pallidimacula	
Hypolimnas anthedon wahlbergi	Variable Diadem
Hypolimnas misippus	Common Diadem
Hypolycaena philippus philippus	Purple-brown Hairstreak
Iolaus sidus	Red-line Sapphire
Iolaus silarus silarus	Straight-line Sapphire
Junonia hierta cebrene	Yellow Pansy
Junonia oenone oenone	Blue Pansy
Kedestes mohozutza	Fulvous Ranger
Kedestes niveostriga niveostriga	
Lachnoptera ayresii	Blotched Leopard
Lampides boeticus	Lucerne Blue
Larentia bitrita	Gilt Carpet
Lema sp.	
Lentula minuta	Minute wingless grasshopper
Lentula obtusifrons	
Leptomyrina henningi	
Leptosia alcesta inalcesta	African Wood White
Leptotes pirithous pirithous	

TaxonName	EnglishName
Libythea labdaca laius	African Snout
Lilioceris sp.	
Lobidiopteryx eumares	
Machaeridia bilineata	Two-lined grasshopper
Metisella metis metis	
Metisella metis paris	Gold-spotted Sylph
Microstylum sp.	
Mimoclystia pudicata	Many Lined Carpet
Miteronotus labeosus	Thick-lipped flat bug
Mylothris agathina agathina	Common Dotted Border
Mylothris rueppellii haemus	Twin Dotted Border
Mylothris trimenia	Trimen's Dotted Border
Nemestrinid sp.	
Neolophonotus hirsutus	Hairy robberfly
Neomochtherus sp 1	
Nepheronia argia varia	Large Vagrant
Nepheronia argia variegata	Variegated Large Vagrant
Neptis goochii	Streaked Sailer
Neptis saclava marpessa	Spotted Sailer
Netrobalane canopus	Buff-Tipped Skipper
Obolcola decisa	
Obolcola deocellata	
Oonotus sericeus	Silky stag beetle
Orachrysops ariadne	Karkloof Blue
Pachypaederus crassus	Solid rove beetle
Papilio constantinus constantinus	Constantine's Swallowtail
Papilio dardanus cenea	Mocker Swallowtail
Papilio demodocus demodocus	Citrus Swallowtail
Papilio echerioides echerioides	White-banded Swallowtail
Papilio euphranor	Bush Kite Swallowtail
Papilio nireus lyaeus	Green-banded Swallowtail
Papilio ophidicephalus zuluensis	Zululand Emperor Swallowtail
Paralethe dendrophilus albina	
Paralethe dendrophilus indosa	
Paralethe indosa albina	Yellow-spotted Bush Beauty
Paralethe indosa indosa	White-spotted Bush Beauty
Pareclipsis puncata	
Phalanta eurytis eurytis	Forest Leopard
Phalanta phalantha aethiopica	African Leopard
Philharmostes zuluensis	Zululand horned beetle
Phloeonotus humilis	
Piercia dryas	
Piercia spatiosata	Spacious Carpet
Piercia vittata	
Platycorynus dejeani	Dejean's milkweed beetle
Platypleura cf. brunnea	
Pnorisa squalus	
Precis archesia archesia	
Precis octavia sesamus	Gaudy Commodore
Promachus amastrus	
Promachus sp.	

TaxonName	EnglishName
Prosoeca sp. 2	
Protogoniomorpha parhassus	Common Mother-of-Pearl
Pseudomaenas oncodogramma	Geometric
Pseudonympha magoides	False Silver-bottom Brown
Pseudonympha varii	Vari's Brown
Pseudopristilophus summus	
Psilocerea immitata	
Psilocladia obliquata	Silvered Thorn
Reduviid sp.	
Rhabdogaster rustica	
Sarangesa seineri durbana	Dark Elfin
Sciobius holmi	Holm's snout beetle
Sciobius spatulatus	Spathulate snout weevil
Sciobius tenuicornis	Slender-horned snout weevil
Scopula internata	
Scopula serena	Fair wave
Scraptiid sp.	
Silvanidiella amazulu	Zulu small wingless grasshopper
Silvanidium margaretae	Margaret's forest wingless grasshopper
Somaticus varicollis	Variable-necked darkling beetle
Spialia dromus	Forest Sandman
Stagira nkandlhaensis	Nkandlha cicada
Stygionympha wichgrafi williami	Wichgraf's Brown
Swaziacris burtti	Burtt's Swazi wingless grasshopper
Synolcus amnoni	Amnon's corrugated-wing robberfly
Syrittosyrphus opacea	Dark hover fly
Systolocranius alternans	
Systolocranius validus	Strong ground beetle
Tabanid sp.	
Tagiades flesus	Clouded Flat
Telchinia cabira	Yellow-banded Acraea
Telchinia esebria	Dusky Acraea
Telchinia igola	Dusky-veined Acraea
Telchinia rahira	Marsh Acraea
Telchinia serena	Dancing Acraea
Tettiella conofrons	
Tettiella sp	
Trachytettix horridus	
Tristria discoidalis	
Vanessa cardui	Painted Lady
Whitea alticeps	High-headed White's grasshopper
Whitea coniceps	Cone-headed White's grasshopper
Xanthorhoe melissaria	
Zenonia zeno	Orange-Spotted Skipper
Zerenopsis lepida	Leopard Magpie
Zizeeria knysna	Sooty Blue
Zizula hylax	Gaika Blue
Malacostraca	
Talitriator africanus	
Mammalia	
Caracal caracal caracal	Caracal

TaxonName	EnglishName
Hystrix africaeaustralis	Cape porcupine
Miniopterus schreibersii	Schreiber's long-fingered bat
Myosorex sclateri	Sclater's forest shrew
Philantomba monticola bicolor	Blue duiker
Potamochoerus larvatus koiropotamus	Bushpig
Reptilia	
Aparallactus capensis	Black-headed centipede eater; Cape centipede eater
Bradypodion nemorale	Qudeni dwarf chameleon; Zululand dwarf chameleon
Philothamnus semivariegatus	Spotted Bush Snake

Appendix G: Nkandla Forest Complex Flora Species lists

Family	TaxonName	EnglishName	SARDBName	CITES	Ordinance
Dicotyledons					
Rubiaceae	*Agathisanthemum bojeri bojeri*		Least Concern		
Rubiaceae	*Alberta magna*	Natal Flamebush	Near Threatened		Protected
Apiaceae	*Alepidea amatymbica var. amatymbica*	Giant Alepidea, Larger Tinsel Flowers	Not Evaluated		Protected
Scrophulariaceae	*Anastrabe integerrima*		Least Concern		
Rubiaceae	*Anthospermum hispidulum*		Least Concern		
Asclepiadaceae	*Asclepias sp.*				
Asteraceae	*Aster bakeranus*	Wild Aster	Not Evaluated		Controlled
Sapindaceae	*Atalaya natalensis*	Natal wing-nut	Near Threatened		Protected
Capparaceae	*Bachmannia woodii*		Least Concern		
Begoniaceae	*Begonia sutherlandii sutherlandii*		Least Concern		
Asteraceae	*Berkheya rhapontica rhapontica*		Least Concern		
Melianthaceae	*Bersama tysoniana*	Common White Ash,Common Bersama	Least Concern		Protected
Rubiaceae	*Borreria natalensis*				
Asteraceae	*Brachylaena uniflora*		Least Concern		
Loganiaceae	*Buddleja pulchella*		Least Concern		
Fabaceae	*Calpurnia aurea aurea*		Least Concern		
Rubiaceae	*Canthium ciliatum*		Least Concern		
Apocynaceae	*Carissa bispinosa*				
Flacourtiaceae	*Casearia gladiiformis*		Least Concern		
Celastraceae	*Cassine aethiopica*				
Celastraceae	*Cassine papillosa*	Common Saffron,Common Saffronwood			Protected
Celastraceae	*Cassine peragua*				
Celastraceae	*Cassine sp.*				
Icacinaceae	*Cassinopsis tinifolia*		Least Concern		
Fabaceae	*Chamaecrista mimosoides*		Least Concern		
Asteraceae	*Cineraria albicans*		Least Concern		
Euphorbiaceae	*Clutia sp.*				
Connaraceae	*Cnestis natalensis*				
Rubiaceae	*Conostomium natalense var. glabrum*		Least Concern		
Crassulaceae	*Crassula alba var. alba*		Least Concern		
Crassulaceae	*Crassula inandensis*		Least Concern		Protected

Appendix G

Family	TaxonName	EnglishName	SARDBName	CITES	Ordinance
Lauraceae	*Cryptocarya latifolia*		Declining		
Lauraceae	*Cryptocarya myrtifolia*	Myrtle Quince,Wild Camphor	Vulnerable		Protected
Cunoniaceae	*Cunonia capensis*		Least Concern		
Cornaceae	*Curtisia dentata*	Assegai	Near Threatened		Protected
Boraginaceae	*Cynoglossum geometricum*		Least Concern		
Lobeliaceae	*Cyphia elata var. elata*		Least Concern		
Fabaceae	*Dalbergia obovata*		Least Concern		
Flacourtiaceae	*Dovyalis lucida*		Least Concern		
Euphorbiaceae	*Drypetes gerrardii var. gerrardii*		Least Concern		
Acanthaceae	*Duvernoia adhatodoides*		Least Concern		
Sapotaceae	*Englerophytum magalismontanum*		Least Concern		
Sapotaceae	*Englerophytum natalense*		Least Concern		
Loranthaceae	*Erianthemum dregei*		Least Concern		
Ericaceae	*Erica cubica var. coronifera*		Least Concern		
Ericaceae	*Erica cubica var. cubica*		Least Concern		
Ericaceae	*Erica drakensbergensis*		Least Concern		
Ericaceae	*Erica leucopelta var. ephebioides*		Least Concern		
Ericaceae	*Erica woodii*				
Erythroxylaceae	*Erythroxylum pictum*		Least Concern		
Myrtaceae	*Eugenia zuluensis*		Least Concern		
Moraceae	*Ficus craterostoma*		Least Concern		
Clusiaceae	*Garcinia gerrardii*	Forest Mangosten	Least Concern		Controlled
Rubiaceae	*Gardenia thunbergia*		Least Concern		
Flacourtiaceae	*Gerrardina foliosa*		Least Concern		
Thymelaeaceae	*Gnidia calocephala*		Least Concern		
Thymelaeaceae	*Gnidia polyantha*		Least Concern		
Apocynaceae	*Gonioma kamassi*	Kamassi	Least Concern		Protected
Asteraceae	*Helichrysum adenocarpum adenocarpum*		Least Concern		
Asteraceae	*Helichrysum adenocarpum ammophilum*		Least Concern		
Asteraceae	*Helichrysum appendiculatum*		Least Concern		
Asteraceae	*Helichrysum aureonitens*	Golden Everlasting	Least Concern		Controlled
Asteraceae	*Helichrysum cephaloideum*		Least Concern		
Asteraceae	*Helichrysum chionosphaerum*		Least Concern		
Asteraceae	*Helichrysum obductum*		Least Concern		

Appendix G

Family	TaxonName	EnglishName	SARDBName	CITES	Ordinance
Loranthaceae	*Helixanthera woodii*		Least Concern		Protected
Flacourtiaceae	*Homalium dentatum*		Least Concern		
Hypericaceae	*Hypericum aethiopicum aethiopicum*		Least Concern		
Balsaminaceae	*Impatiens hochstetteri hochstetteri*		Least Concern		
Fabaceae	*Indigofera natalensis*		Least Concern		
Asteraceae	*Inulanthera calva*		Least Concern		
Oleaceae	*Jasminum abyssinicum*		Least Concern		
Acanthaceae	*Justicia campylostemon*		Least Concern		
Rubiaceae	*Keetia gueinzii*		Least Concern		
Lamiaceae	*Leonotis ocymifolia*				
Asteraceae	*Lopholaena platyphylla*		Least Concern		
Acanthaceae	*Mackaya bella*		Least Concern		
Capparaceae	*Maerua racemulosa*		Least Concern		
Myrsinaceae	*Maesa lanceolata var. rufescens*	False Assegai	Not Evaluated		Controlled
Celastraceae	*Maytenus nemorosa*				
Celastraceae	*Maytenus peduncularis*		Least Concern		
Celastraceae	*Maytenus sp.*				
Celastraceae	*Maytenus undata*	Koko Tree,South African Holly	Least Concern		Controlled
Euphorbiaceae	*Micrococca capensis*		Least Concern		
Sapotaceae	*Mimusops obovata*		Least Concern		
Polygalaceae	*Muraltia lancifolia*		Least Concern		
Myricaceae	*Myrica pilulifera var. puberula*				
Loganiaceae	*Nuxia congesta*		Least Concern		
Lauraceae	*Ocotea bullata*	Stinkwood,Black Stinkwood	Endangered		Specially protected
Oleaceae	*Olea macrocarpa*				
Oleaceae	*Olea sp.*				
Oliniaceae	*Olinia radiata*		Least Concern		Protected
Asteraceae	*Othonna sp.*				
Rubiaceae	*Otiophora calycophylla calycophylla*		Least Concern		Protected
Asclepiadaceae	*Pachycarpus rostratus*		Critically Endangered, Possibly Extinct		Protected
Rubiaceae	*Pachystigma macrocalyx*		Least Concern		
Rubiaceae	*Pavetta lanceolata*		Least Concern		

Appendix G

Family	TaxonName	EnglishName	SARDBName	CITES	Ordinance
Rubiaceae	*Pavetta natalensis*		Least Concern		
Malvaceae	*Pavonia columella*		Least Concern		
Thymelaeaceae	*Peddiea africana*		Least Concern		
Rubiaceae	*Pentanisia prunelloides prunelloides*	Broad-leaved Pentanisia	Least Concern		Controlled
Lamiaceae	*Plectranthus ciliatus*		Least Concern		
Lamiaceae	*Plectranthus laxiflorus*		Least Concern		
Lamiaceae	*Plectranthus zuluensis*		Least Concern		
Proteaceae	*Protea gaguedi*		Least Concern		Specially protected
Proteaceae	*Protea welwitschii*				
Proteaceae	*Protea welwitschii*		Least Concern		Specially protected
Anacardiaceae	*Protorhus longifolia*	Red Beech	Least Concern		Controlled
Fabaceae	*Psoralea pinnata*	Fountain Tree	Not Evaluated		Controlled
Rubiaceae	*Psychotria capensis capensis var. capensis*		Least Concern		
Celastraceae	*Pterocelastrus echinatus*		Least Concern		
Flacourtiaceae	*Rawsonia lucida*		Least Concern		
Anacardiaceae	*Rhus discolor*				
Anacardiaceae	*Rhus discolor*				
Fabaceae	*Rhynchosia sordida*		Least Concern		
Fabaceae	*Rhynchosia woodii*		Least Concern		
Violaceae	*Rinorea ilicifolia ilicifolia var. ilicifolia*		Least Concern		
Flacourtiaceae	*Scolopia mundii*		Least Concern		
Flacourtiaceae	*Scolopia zeyheri*		Least Concern		
Gentianaceae	*Sebaea sedoides*				
Scrophulariaceae	*Selago densiflora*		Least Concern		
Scrophulariaceae	*Selago immersa*		Least Concern		
Asteraceae	*Senecio rhyncholaenus*		Least Concern		Protected
Asteraceae	*Senecio serratuloides var. rehmannii*				
Malvaceae	*Sida cordifolia*				
Scrophulariaceae	*Sopubia cana var. cana*		Least Concern		
Lamiaceae	*Stachys tubulosa*		Least Concern		
Asteraceae	*Stoebe vulgaris*				
Gesneriaceae	*Streptocarpus candidus*		Least Concern		Protected
Gesneriaceae	*Streptocarpus gardenii*		Least Concern		
Gesneriaceae	*Streptocarpus grandis grandis*		Least Concern		

Appendix G

Family	TaxonName	EnglishName	SARDBName	CITES	Ordinance
Gesneriaceae	*Streptocarpus grandis grandis*				
Gesneriaceae	*Streptocarpus pentherianus*		Least Concern		
Gesneriaceae	*Streptocarpus polyanthus comptonii*		Least Concern		
Gesneriaceae	*Streptocarpus wilmsii*		Least Concern		
Loganiaceae	*Strychnos mitis*		Least Concern		
Myrtaceae	*Syzygium gerrardii*		Least Concern		
Asclepiadaceae	*Tenaris christianae*		Vulnerable		Protected
Asteraceae	*Tenrhynea phylicifolia*		Least Concern		
Scrophulariaceae	*Tetraselago natalensis*		Least Concern		
Lamiaceae	*Teucrium kraussii*		Least Concern		
Rubiaceae	*Tricalysia capensis var. capensis*		Least Concern		
Hamamelidaceae	*Trichocladus grandiflorus*		Least Concern		
Asteraceae	*Ursinia saxatilis*		Least Concern		
Asteraceae	*Vernonia wollastonii*		Least Concern		
Campanulaceae	*Wahlenbergia epacridea*		Least Concern		
Asclepiadaceae	*Xysmalobium parviflorum*		Least Concern		
Fabaceae	*Zornia capensis capensis*	Caterpillar Bean	Least Concern		Controlled
Horsetails					
Equisetaceae	*Equisetum ramosissimum*				
Monocotyledons					
Orchidaceae	*Aerangis mystacidii*		Least Concern	Appendix II	
Alliaceae	*Agapanthus campanulatus campanulatus*	Bell Agapanthus	Least Concern		Controlled
Asphodelaceae	*Aloe saundersiae*		Critically Endangered	Appendix II	
Orchidaceae	*Angraecum conchiferum*		Least Concern	Appendix II	
Orchidaceae	*Angraecum pusillum*		Least Concern	Appendix II	
Orchidaceae	*Angraecum sacciferum*		Least Concern	Appendix II	
Iridaceae	*Aristea angolensis acutivalvis*		Least Concern		
Iridaceae	*Aristea woodii*				
Luzuriagaceae	*Behnia reticulata*	Forest Smilax	Least Concern		Controlled
Orchidaceae	*Bonatea porrecta*		Least Concern	Appendix II	
Orchidaceae	*Brownleea coerulea*		Least Concern	Appendix II	
Orchidaceae	*Bulbophyllum sandersonii*			Appendix II	

Appendix G

Family	TaxonName	EnglishName	SARDBName	CITES	Ordinance
Orchidaceae	*Bulbophyllum scaberulum*		Vulnerable	Appendix II	Protected
Orchidaceae	*Calanthe sylvatica*		Least Concern	Appendix II	
Anthericaceae	*Chlorophytum modestum*		Least Concern		
Commelinaceae	*Commelina africana var. africana*	Yellow Wandering Jew,Yellow Commelina	Least Concern		Controlled
Commelinaceae	*Cyanotis speciosa*	Doll's Powderpuff	Least Concern		Controlled
Cyperaceae	*Cyperus obtusiflorus var. obtusiflorus*		Least Concern		
Orchidaceae	*Cyrtorchis arcuata*			Appendix II	
Orchidaceae	*Diaphananthe xanthopollinia*			Appendix II	
Iridaceae	*Dierama floriferum*		Least Concern		
Iridaceae	*Dierama tyrium*		Least Concern		
Orchidaceae	*Disa nervosa*		Least Concern	Appendix II	
Orchidaceae	*Disa patula var. patula*		Least Concern	Appendix II	
Orchidaceae	*Disa zuluensis*		Endangered	Appendix II	Specially protected
Orchidaceae	*Disperis anthoceros*			Appendix II	
Orchidaceae	*Disperis fanniniae*		Least Concern	Appendix II	
Hyacinthaceae	*Drimia robusta*		Data Deficient - Taxonomically Problematic		Protected
Orchidaceae	*Eulophia angolensis*		Least Concern	Appendix II	
Orchidaceae	*Eulophia ensata*		Least Concern	Appendix II	
Orchidaceae	*Eulophia nigricans*			Appendix II	
Orchidaceae	*Eulophia petersii*		Least Concern	Appendix II	Protected
Orchidaceae	*Habenaria arenaria*		Least Concern	Appendix II	
Orchidaceae	*Habenaria malacophylla*		Least Concern	Appendix II	
Iridaceae	*Hesperantha baurii baurii*		Least Concern		
Hypoxidaceae	*Hypoxis argentea var. argentea*		Least Concern		
Cyperaceae	*Isolepis costata var. macra*				
Orchidaceae	*Liparis bowkeri*		Least Concern	Appendix II	
Iridaceae	*Moraea marionae*		Least Concern		Specially protected
Orchidaceae	*Mystacidium aliceae*		Vulnerable	Appendix II	Specially protected
Orchidaceae	*Mystacidium caffrum*			Appendix II	
Orchidaceae	*Mystacidium flanaganii*		Least Concern	Appendix II	
Orchidaceae	*Mystacidium venosum*		Least Concern	Appendix II	
Orchidaceae	*Polystachya cultriformis*		Least Concern	Appendix II	

Appendix G

Family	TaxonName	EnglishName	SARDBName	CITES	Ordinance
Orchidaceae	*Polystachya ottoniana*	Tree Orchid	Least Concern	Appendix II	Protected
Orchidaceae	*Polystachya pubescens*	Hairy-lipped Polystachya	Least Concern	Appendix II	Protected
Orchidaceae	*Polystachya transvaalensis*		Least Concern	Appendix II	
Orchidaceae	*Satyrium longicauda var. jacottetianum*		Least Concern	Appendix II	
Orchidaceae	*Satyrium longicauda var. longicauda*		Least Concern	Appendix II	
Orchidaceae	*Satyrium macrophyllum*		Least Concern	Appendix II	
Orchidaceae	*Satyrium neglectum neglectum*			Appendix II	
Amaryllidaceae	*Scadoxus multiflorus katharinae*		Least Concern		
Orchidaceae	*Schizochilus gerrardii*		Endangered	Appendix II	
Hyacinthaceae	*Scilla kraussii*				
Hyacinthaceae	*Scilla natalensis*	Large blue scilla, blue hyacinth,Blue Squill	Vulnerable		Specially protected
Cyperaceae	*Scleria natalensis*		Least Concern		
Orchidaceae	*Stenoglottis fimbriata var. saxicola*			Appendix II	
Orchidaceae	*Stenoglottis fimbriata var. saxicola*			Appendix II	
Orchidaceae	*Stenoglottis longifolia*		Least Concern	Appendix II	Specially protected
Orchidaceae	*Tridactyle bicaudata bicaudata*	Tree Orchid	Least Concern	Appendix II	Protected
Orchidaceae	*Tridactyle tricuspis*		Least Concern	Appendix II	
Iridaceae	*Watsonia densiflora*		Least Concern		
Lycopodiaceae	*Lycopodium cernuum*				
Lycopodiaceae	*Lycopodium clavatum*		Least Concern		

Appendix H: Pro forma annual plan of operation

Notes of a management meeting for Nkandla Forest Complex held at … office on …

Present:

Apologies:

CC:

In the notes set out below two separate tables are presented. The first sets out all of the management targets, which are the responsibility of the Nkandla Forest Complex Officer in Charge and the second sets out all of the management targets that are the responsibility of other units or individuals.

Table 17: Progress and goals set for the Nkandla Forest Complex

Management target	2015/16 Progress	2015/16 Goals	Completion date	Responsibility	Action
LEGAL COMPLIANCE AND ENFORCEMENT					
Creation of cooperative structures with local communities and law enforcement officials.			Year 2	Officer in Charge	
Regular patrols covering the full extent of the NFC.			Ongoing	Officer in Charge	
Prosecution of any offender caught committing an offence.			Ongoing	Officer in Charge	
STAKEHOLDER ENGAGEMENT					
Quarterly meetings of the advisory committee.			Ongoing	Officer in Charge	
Capacity building in the communities in terms of management of the reserves, an understanding of the values and management of the forest complex.			Ongoing	Community Conservation Officer	
BUFFER ZONE PROTECTION AND REGIONAL MANAGEMENT					
Identification of threatening processes on the forest complex's boundary.			Year 2	Ecological Advice Unit	
Focus efforts of the biodiversity stewardship			Year 3	Stewardship Unit and District	

Management target	2015/16 Progress	2015/16 Goals	Completion date	Responsibility	Action
programme on priority areas in the buffer around the NFC.				Conservation Officer	
Adoption of environmentally appropriate land uses in IDPs and SDFs in the areas immediately surrounding the forest complex.			Annually	Officer in Charge	
Retention of existing benign land uses in the areas immediately surrounding the protected area.					
ECO-TOURISM					
An understanding of annual tourist numbers and a tourism market profile for the forest complex.			Year 2	Ecotourism and Marketing Unit	
A feasibility study to guide the development of tourism products in the Forest Complex.			Year 3	Regional Conservation Manager	
Sustainable tourism products within the reserve.					
ENVIRONMENTAL INTERPRETATION AND EDUCATION					
Provision of an environmental interpretation and education tour to schools in the neighbouring local communities.			Year 3	Community Conservation Officer	

Management target	2015/16 Progress	2015/16 Goals	Completion date	Responsibility	Action
CONSERVATION MANAGEMENT					
Adoption and implementation of A fire management plan.			Year 1	Officer in Charge and Ecological Advice Unit	Requires support from the Ecological Advice Unit
Burning according to the annual plan in accordance with ecological advice.			Ongoing	Officer in Charge and Ecological Advice Unit	
Compliance with the National Veld and Forest Fires Act.			Ongoing	Officer in Charge	
Compliance with the Biodiversity Act in terms of the preparation of an invasive species control plan.			Year 1	Officer in Charge	Requires support from the Ecological Advice and Alien Plant Control Units
50% reduction in infestations of all listed invasive plants in five years.			Year 5	Alien Plant Control Unit and Officer in Charge	Requires support from the Ecological Advice and Alien Plant Control Units
A detailed map depicting areas of soil erosion within the forest complex.			Year 5	Officer in Charge	Requires support from the ecological advice unit

Management target	2015/16 Progress	2015/16 Goals	Completion date	Responsibility	Action
Implementation of soil erosion control measures in areas in which plant cover is low, which are susceptible to erosion.					
Creation of cooperative structures between Ezemvelo KZN Wildlife, local communities and law enforcement officials.			Year 2 - ongoing	Officer in Charge	
Control of any alien animals found within the forest complex.					
An agreed upon approach to any extractive resource use.			If required	Officer in Charge	Requires support from the Senior Officer in Charge
No illegal collection of biological material or samples.			If required	Officer in Charge	Requires support from the Resource Use Ecologist
An agreed upon approach to future wildlife species introductions.			Year 2	Ecological Advice Unit and Officer in Charge	Requires guidance from the ecological advice unit
Control of population numbers of species that are exceeding identified carrying capacities.			Ongoing		

Management target	2015/16 Progress	2015/16 Goals	Completion date	Responsibility	Action
Effective procedures and relationships with neighbours in dealing with problem animal control.			Year 1	Officer in Charge	
Botanical inventory survey report on which to base management decisions.			Ongoing	Officer in Charge, Resource Use Ecologist and Ecological Advice	
Faunal inventory report on which to base management decisions.					
Surveillance and monitoring plans for key threatening processes.			Year 3	Ecological Advice Unit	
Monitoring plans for key rare and endangered species.					
Maintenance of optimum population numbers of rare and endangered species.			Ongoing	Ecological Advice Unit and Officer in Charge	Requires guidance from the ecological advice unit
CULTURAL HERITAGE MANAGEMENT					
Photographic and descriptive records of heritage sites.			Year 2	Officer in Charge and AMAFA	
OPERATIONAL MANAGEMENT					
Adequate funding to achieve the objectives of the forest complex.			Year 1	Conservation Manager	

Management target	2015/16 Progress	2015/16 Goals	Completion date	Responsibility	Action
Submit a proposal for the appointment of staff required to effectively manage the reserves.			Year 4	Conservation Manager	
Regular scheduled maintenance of all facilities and infrastructure.			Ongoing	Officer in Charge	
Documentation on all the walking trails in the NFC.			Year 2		
Walking trails are easily identified.					
Effective communication throughout the forest complex.			Year 1		
All staffing establishments and administrative infrastructure is to have electricity.					

Appendix I: Priority alien plant species to be eradicated at Nkandla Forest Reserve

EZEMVELO KZN WILDLIFE
Leaders in Conservation

Memorandum

TO: CMSZ

FROM: C/TECH(SZ)

DATE: 18 JUNE 2003

PRIORITY ALIEN PLANT SPECIES TO BE ERADICATED AT NKANDLA FOREST RESERVE

The infestation of alien plants established within the Nkandla Forest Reserve has reached a high level, which if not controlled will reach proportions that will warrant enormous financial expenditure. Aggressive invasive species such as Mauritius thorn, American bramble, wattle, pine and gum have encroached certain grasslands and drainage lines which further extend the distribution potential of these invasive species.

The following areas have been identified as potential threats to biodiversity and are recommended for control.

1. **Black wattle** *Acacia mearnsii*

A wattle woodlot is established adjacent to the P50-2 outside of the protected area within the catchment area of a tributary of the Mavungwini stream which flows into the north eastern section of the reserve. Wattle seedlings downstream of the woodlot, have resulted in mature trees which are now established within the tributary and adjacent grasslands.

Wattle trees have been located approximately 150m north of the old quarry site established along the P50-2 north of the access road to Chibini camp. These trees are visible from the grasslands above the mountain hut and are established in a localised area within the grassland north of the old quarry site.

All commercial trees species which have over the years established within the reserve should be removed. **Wattle, pine and gum trees can be treated simultaneously**, especially since many of these trees are established within the vicinity of the road reserve.

1

2. **Mauritius thorn** *Caesalpinia decapetala*

A small tributary of the Mavungwini stream originates within the reserve north of Sibhudeni hill where Mauritius thorn is established. This invasive plant has encroached upon indigenous vegetation within this drainage line and is the source of seed dispersal downstream. This isolated patch should be controlled to prevent further expansion and dispersal within the Mavungwini catchment.

Mauritius thorn coppices when cut and trailing branches root where they touch the ground. Wider dispersal is generally achieved by means of the large seeds which are readily transported by water. Mauritius thorn can be controlled by a combination of chemical and mechanical means. Chemicals should be applied to small plants or to the regrowth of larger individuals that have been slashed. Seedlings and saplings can be uprooted when the soil is moist. However, to prevent coppicing without the use of herbicide, the entire rootstock must be dug out.

3. **American bramble** *Rubus cuneifolius*

This species is the greatest threat to biodiversity within the reserve and neighbouring Traditional Authority areas. Bramble has established both within the grasslands and drainage lines, making it a species which will be difficult to eradicate. The exotic bramble forms impenetrable stands which are difficult to penetrate. There are however indigenous bramble species which may cause confusion to the untrained eye. These plants however do not develop the invasive characteristics of the exotic variety.

The main point of focus is the drainage line which forms part of the Karkloof blue butterfly (*Orachrysops ariadne*) monitoring project (29°35'S 30°08'E). There are several drainage lines which flow into the Mome catchment which are infested with exotic bramble and where *Indigofera woodii* occur to support this butterfly population. The exotic bramble is a direct threat to the survival of the Karkloof blue butterfly which is a highly localized endemic South African species that is currently Red-listed as 'Vulnerable'. This rare butterfly lay its eggs on *I. woodii* and the early larval instars feed on this host plant. The bramble has invaded parts of this drainage line, shading out *I. woodii* making it difficult for the butterflies to lay their eggs on it. The unique life cycle of this butterfly requires that the host plant *I. woodii* and a certain ant species are present to complete its unique life cycle.

Dr Adrian Armstrong identified the following management guidelines for control of alien invasive plants in the grassland and especially in the drainage lines. Remove any exotic brambles, but be careful not to spray the Wood's indigo plants and indigenous brambles (distinguished from the alien bramble by the dense woolly white undersides of the leaves or other characters). **Herbicide should not be applied between the beginning of March and at least the end of June**, the period when the Wood's indigo plants are flowering and producing seed.

Further reference can be made to the Management Guidelines for the Karkloof Blue Butterfly *Orachrysops ariadne* colony adjacent to Nkandla Forest Reserve compiled by Dr. A. Armstrong.

Appendix J: The Bambata Rebellion of 1906: Nkandla Operations and the Battle of Mome Gorge, 10 June 1906

The South African Military History Society

Die Suid-Afrikaanse Krygshistoriese Vereniging

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THE BAMBATA REBELLION OF 1906: NKANDLA OPERATIONS AND THE BATTLE OF MOME GORGE, 10 June 1906

by K.G.Gillings, JCD

The Battle of Mome Gorge broke the back of an uprising which has had its parallels in this country on more than one occasion since 1906.
Discontent amongst the Blacks in Natal had long been welling up. Extensive White and Indian immigration had resulted in the traditional way of life of the Blacks being drastically changed. Allocation of farms in Zululand to Whites for sugar farming was met with dissatisfaction and had resulted in squatting and, in some cases, exorbitant rentals in the form of hut tax on those farms. Registration of births and deaths, made compulsory by the Natal government, was foreign to the Blacks, and the 1904 census was viewed with great suspicion.

Dinizulu, King Getshwayo's son and successor, had been deposed by the Natal government, which proceeded to break down the Zulus' traditional way of life, found repugnant by the 'civilised' Whites. The Blacks were restricted in the use of firearms, barred from drinking European liquor, and deprived of the franchise.

In May 1905, the Natal government under the premiership of Sir George Sutton, collapsed due to the state of the economy and the government's inability to have various tax bills passed through Parliament.

The Hon Charles Smythe then formed a coalition government and set about trying to reimburse a somewhat depleted treasury during a depression which followed the Anglo-Boer War. His solution was to have a profound effect on the events which followed.

The Black population of Natal was feeling the effects of the depression more than the other races. East Coast Fever had spread like wildfire through their symbol of wealth - their cattle. On 31 May 1905, a severe hailstorm struck Natal, wreaking havoc on the colony's agriculture. This phenomenon caused rumours to sweep the colony that this was a command to rise against the Whites, fuelled by a wave of what became known as 'Ethiopianism' which requires some explanation. This quasi religious separatist movement with its origin in Ethiopia, was spreading like wildfire amongst the Blacks. It had found its South African origin in Pretoria, having been established in 1892 by one M M Makone, who was subsequently joined by J M Dwane, when the former broke from the Wesleyan Methodist Church to establish the Ethiopian Church, totally independent of White control, and with a call 'Africa for the Africans'. Following the hailstorm, a 'verbal order' was given to undertake the following:

'All pigs must be destroyed, as also all white fowls. Every European utensil hitherto used for holding food or eating out of must be discarded or thrown away. Anyone failing to comply will have his kraal struck by a thunderbolt when, at some date in the future, "he" sends a storm more terrible than the last, which was brought on by the Basuto king in his wrath against the White race for having carried a railway to the immediate vicinity of his ancestral stronghold'.

In some places, it was believed that white goats and cattle were also to be destroyed. Pigs, although kept by many Blacks to sell or barter to Whites, were not eaten by them; they had been introduced by the White race, and were regarded by the Blacks as creatures whose flesh 'smells'. It seems to be generally accepted that the motive for the slaughter of white fowls and the destruction of European manufactured utensils was a sinister but clear indication that the White man was to be killed.

The reference to the thunderbolt was a pointer to the Zulu king (Dinizulu), when considered in the light of the Basuto king's action. So much so, in fact, that very soon numbers of chiefs began flocking to Dinizulu's Usutu kraal, on the north bank of the Black Mfolozi River. King Dinizulu flatly denied his involvement but told the chiefs that if they wanted to conform to the order, then that was their business. In fact, Dinizulu became so exasperated that on a visit by Tilonko, a chief from mid-Illovo, he pointed to the numerous pigs running about the kraal and said: 'Look - pigs exist here!' Furthermore, he ordered one of his servants to bring some of the white dishes which he used regularly.

The origin of the order, therefore, remains a mystery to this day. Nonetheless, the Zulus of Natal began obeying these mysterious commands in increasing numbers, a clear indication of simmering discontent, and very little action by the Natal government to investigate its root causes. In fact, reports from throughout Natal indicated that many Whites welcomed the prospect of a confrontation.

The bubble of discontent burst with the imposition by the Smythe government of a poll-tax of UKPND 1 per head on all White, Coloured, Indian and Black residents in Natal and Zululand, of the age of 18 and upwards. Blacks who paid a hut tax (already referred to) were exempted. Once it became law, the Blacks objected strongly to its imposition, because of the huge difference between their own wages and those of Whites. Also, many young Blacks were already paying hut tax on their parents' behalf. On the other hand, the parents resented it because they now feared that their children would no longer contribute towards their hut tax.

The date for the introduction of the tax was set for 20 January 1906, although Blacks would be given until 31 May to pay before action would be taken against them for non-compliance.

On 22 November 1905, instructions were issued to all magistrates to assemble the chiefs in their areas, to explain the new law, and the reasons for its introduction.

By the beginning of 1906, it was clear that there was so much opposition to the new law that outbreaks of violence were inevitable. King Dinizulu, however, not only paid his tax before the due date - he also saw to it that all his tribesmen did the same. Although Dinizulu (following his banishment to St Helena) had been deprived of his paramountry by the government, being relegated to Induna and Chief of the Usutu clan, he was still generally regarded by the Zulus as their king.

THE BUBBLE BURSTS

The first indication of trouble came on 17 January 1906. Henry Smith, an Umlaas Road farmer and popular master, accompanied his workers to Camperdown to pay their taxes. That evening, a servant handed him a note whilst he was on his verandah. As he turned to read it in the light of a lamp, he was stabbed to death. In the subsequent trial the servant admitted that he had resented paying his tax, and had killed his master for that reason.

Then, on 22 January, another incident followed at Mapumulo, when the magistrate, Mr R E Dunn, was threatened by hundreds of chanting, dancing tribesmen. Only intervention by their chief, Ngobizembe, saved him from certain death. Similar incidents followed at Nsuze, Umvoti and elsewhere. On 7 February, the Umgeni divisional magistrate, Mr T R Bennett, was threatened by 27 armed Blacks whilst collecting taxes at Henley. The following day, 14 white Natal policemen under Sub-Inspector Hunt rode out to arrest the culprits. They arrived at Mr Henry Hosking's farm 'Trewergie', near present day Baynesfield at 17h30. Despite Mr Hosking's advice to the contrary, Hunt proceeded to the kraal of one of the ringleaders of the Henley affair, one Mjolo, and arrested him and two others. The police were surrounded and Inspector Hunt and Trooper Armstrong were killed. Command fell upon Sgt F W Stephens, who wisely decided to fall back on the farmstead, a short distance downhill, thence to Pietermaritzburg.

That was enough for the Governor, Sir Henry McCallum; the next day, 9 February, he proclaimed martial law. On that day, the left and right wings of the Natal Carbineers (NC), 2 squadrons of the Border Mounted Rifles (BMR),

1 squadron of the Natal Royal Regiment (NRR), 2 sections of 'C' Battery Natal Field Artillery (NFA), and detachments of the Natal Medical, Telegraph and Service Corps - some 1 000 men in total - were mobilized. These units were commanded by Col Duncan McKenzie.

A portion of this force closed on 'Trewergie', arrested the two culprits held responsible for the murder and, at a hastily convened court martial, found them guilty and immediately executed them in the presence of their Chief, Mveli (who had assisted the troops in locating the culprits).

Some days later, 24 tribesmen were arrested, also tried by court martial and 12 were sentenced to death. That is where the trouble started! When news of their imminent execution reached England, there was an uproar, and the Secretary of State for the Colonies, Lord Elgin, cabled Sir Henry with an order to suspend the executions pending further investigation. The Prime Minister, the Hon C J Smythe and his entire Cabinet resigned. However, after a great deal of communication between Lord Elgin and Sir Henry, the former gave authority for the executions to go ahead and the Natal government decided to stay on. On 2 April, the sentence was carried out in a valley on the outskirts of Richmond, and the men were buried where they were shot.

Whilst the crisis was in progress, the Natal Militia continued with demonstrations in southern Natal and the North Coast/Mapumulo/Greytown area. By the end of March, the situation seemed to have stabilized sufficiently for Col McKenzie's force to be demobilised.

Unrest was not confined to McKenzie's operational area, however. Incidents of unrest occurred in Chief Ngobizembe's ward, resulting in the mobilisation of the Umvoti Mounted Rifles (UMR) in Greytown, 'C' Battery NFA in Pietermaritzburg, and the Durban Light Infantry (DLI), who were sent by train to Stanger on the Natal North Coast. This column was placed under command of Lt Col G Leuchars and was also demobilised at the end of March.

Then, a minor chief in the Mpanza Valley between Greytown and Keate's Drift added fuel to the fire, and precipitated an uprising which later spread into the heart of the colony. He was chief of the amalondi, who occupied areas of Mvoti, New Hanover, Umgeni and Lions river magistracies. His name was Bambata.

Bambata had been born about 1865 in the Mpanza Valley. He was the son of Mancinza, chief of the amaZondi, and his mother was the daughter of the chief of the powerful Cunu tribe in the Weenen district. In his youth, Bambata was a strong runner (he became known as 'Magudu' - short for Ma guduzela o wa bonel'empunzini (the runner that took the duiker for his model). He was also an expert with the assegai, and a good shottist.

Bambata had a bad reputation and had been convicted on numerous occasions for debt, cattle theft and, early in 1906, for his participation in a faction fight. Even that great friend of the Zulus, R C Samuelson in his book Long, Long Ago desaibes him as a 'thoroughly bad character'. He was informed by his lawyer in Pietermaritzburg that the government was considering deposing him as chief because of his misdemeanors.

When the time came for the amaZondi to pay their taxes, one of Bambata's indunas, Nhlonhlo, informed him that he refused to pay and would resist any attempts to enforce payment with force. The date set for the payment of the tax was 22 February, and the magistrate, Mr J W Cross, having received intelligence that he would probably be killed if he went to Mpanza, instructed Bambata to travel to Greytown instead. On 22 February, Bambata's elders arrived in Greytown, appearing very surly. When asked where Bambata was, they apologized on his behalf informing the officials that he (Bambata) had a stomach ache. What had in fact happened was that Bambata, fearing for his position within the tribe, had remained in a wattle plantation overlooking, and only some four kilometres from, Greytown. Reports indicate that in fact he was attempting, without success, to persuade Nhlonhlo to lay down his arms.

The effect of the presence of this large body of armed Blacks above Greytown had a sequel in the town that evening, for rumours swept throughout the population that they were to be attacked that night, resulting in panic in the town, the women and children going into laager in the town hall, and defensive positions being manned by the men.

In all fairness to Bambata, his action in attempting to persuade Nhlonhlo to lay down his arms and to pay his taxes was creditable. Where he erred was in his failure to report Nhlonhlo's reticence to the authorities, and his having feigned illness. This gave the Natal government the impression that he was in league with the dissidents, and some

days later he was informed that he had been deposed as chief with effect from 23 February 1906. His uncle, Magwababa, who had acted as regent when Bambata's father had died, was re-appointed regent until the coming of age of Bambata's brother, Funirwe, in a year's time. This happened after Bambata had been ordered to report to Pietermaritzburg by the Secretary for Native Affairs to account for his actions.

On 9 March, Maj W J Clark of the Natal Police (NP), with 170 Natal Mounted Police (NMP) and a squadron of the UMR, left for the Mpanza valley to arrest Bambata, but failed to find him. On 11 March, Bambata crossed the Tugela River and made his way to King Dinizulu's Usutu kraal, where he was given shelter (in accordance with Zulu tradition) and arrangements were made to accommodate his wife and children - as it turned out, for the next 14 months! According to Bambata's wife, Dinizulu instructed Bambata to return to Natal, commit an act of rebellion, and then to take refuge in the Nkandla Forest where he would be joined by the Zulus, a claim vehemently denied by Dinizulu at his subsequent trial. Bambata returned to Mpanza on 31 March, accompanied by one of Dinizulu's personal attendants named Cakijana (who was destined to play an important part in the coming events), and another.

Bambata proceeded to seize Magwababa (he had been unable to locate Funizwe) whose wife, fearing that he had been killed, fled to a local farmer, Mr Botha, who reported the incident to the authorities. As it was, Magwababa's life had been spared upon the intervention of Cakijana, and the former subsequently managed to escape.

On 4 April, Col Lenchars mobilized the UMR, and a force of 173 Natal policemen under Lt Col G Mansel set out for Mpanza, reaching Botha's farm (some 10 km from Mpanza) at about midday. It was there that Col Mansel received a message from Inspector J E Rose, who had been attacked at Marshall's Hotel, Mpanza, the previous day and had travelled to the police post at Keate's Drift with three White women and a child from the hotel for safety, that Bambata was in an ambush position along the route. Col Mansel set out with 151 men for Keate's Drift and the combined force (with the refugees) commenced their return journey at 18h15. Whilst travelling throught the thick bush about 114 km from Marshall's Hotel, they were ambushed, and four men were killed. The body of Sgt E T N Brown was only recovered the next day; it had been severely mutilated, the upper lip with its moustache, left forearm and genitals being removed for muti. None of the rebels had been killed, encouraging their belief in their witchdoctor, Malaza's skills in doctoring them, which, he claimed, made them immune to the White man's bullets. Malaza had used portions of a child's body to concoct this muti at his kraal on the late Mr George Buntting's farm 'Fugitives' Drift' near Rorke's Drift.

On 8 April, Col Leuchars' force surrounded the Mpanza bush and shelled Bambata's kraal with the four 15 pounders of 'B' Battery NFA who had by then been called up in toto. Bambata's hut was located and fired by Maj H C Lugg of the UMR. Bambata had fled via the Tugela Gorge, upstream of Kranskop, into Zululand and made his way to the kraal of Simoyi in the mouth of the Mome Gorge. This was the domain of one of the most remarkable characters in modern Zulu history - Sigananda Shezi of the amaCube.

Sigananda's r6le in the Rebellion was significant. His father, Zokufu, and Shaka were cousins, Shaka's mother, Nandi's sister having married Mvakela, Zokufu's father. Zokufu had been an induna in King Cetshwayo's Mlambongwenya kraal (near present day Ulundi) and was skilled in iron smelting and the manufacture of hoes, axes, knives and assegais. Sigananda was born about 1811 and was a supporter of the Usutu faction of the Zulu Royal House. He had been a member of King Dingaan's inKulutshane Regiment, raised in about 1830 (the 17/18 year age group) and had witnessed the killing of Piet Retief and his party at Mgungundlovu. His account of the Voortrekker massacre at Mgungundlovu differs somewhat from the official version. Sigananda fought for King Cetshwayo at the Batfie of Ndondakusuka (the so-called 'Battle of the Princes', near present day Mandini) on 2 December 1856. He had once been cared for by Mancinza (Bambata's father) and was a policeman at the magistrate's office in Grey town about 1871. After a 14-year absence from Zululand, he was invited by Cetshwayo to return there, becoming chief of the powerful amaCube. He also participated in the Anglo-Zulu War of 1879, and during the civil war of 1883 had provided Cetshwayo with refuge at his kraal, Enhlweni, on the edge of the Nkandla Forest.

Sigananda's people had behaved in a rebellious manner when they reached the Nkandla magistracy in January 1906, claiming that they had insufficient money to pay. It should be noted that by this stage, the payment of the poll-tax had become almost universally resented, and much sympathy was felt for Bambata. On 17 April, the amaCube broke out in open rebellion. Three days earlier, on 14 April, the Natal government had offered a reward of UKPNDS 500 for the capture of Bambata, dead or alive. On 16 April, the Commissioner for Native Affairs, Mr Charles Saunders, recommended that a strong imperial force be raised to quell the fast-spreading rebellion. The

government rejected this idea and opted instead for a general mobilization of Natal militia, with an appeal to the neighbouring states for assistance. To this, Transvaal rapidly responded, equipping and paying for its units.

Col Duncan McKenzie was appointed Commander of all these forces.

Most welcome of the contribution from Transvaal were the 500 men consisting of veterans from the Imperial Light Horse (ILH) ('A' Sqn), South African Light Horse (SALH) ('B' Sqn), the Johannesburg Mounted Rifles (JMR) and Scottish Horse ('C' Sqn) and the Northern, Eastern and Western Mounted Rifles ('D' Sqn). They were collectively known as the Transvaal Mounted Rifles (TMR), and gave outstanding service throughout the campaign, being commanded by Lt Col W F Barker.

Before dealing with the Nkandla operations in detail, it is important to describe the disposition of the troops.

At Dundee: The TMR, Royston's Horse (RH) (550), NFA (25 men with two pom-poms), half a company of DLI (55), and detachments of the Medical, Veterinary, Signalling and Service Corps.

At Helpmekaar: Virtually the entire complement of the NC were encamped at Fort Murray Smith (a total of 596 men).

At Ntingwe (between Nkandla and Macala Mountain): The Zulu land Mounted Rifles (ZMR) (90) under Maj W A Vanderplank and the Northern Districts Mounted Rifles (NDMR) (150) under Maj J Abraham.

At Fort Yolland (between Eshowe and Nkandla): Natal Naval Corps (NNC) (106) under Commander F Hoare; 1 section, 'B' Battery NFA (35); NP (200) under Lt Col G Mansel; The Zululand Native Police ('Nongqai') (90) under Insp C E Fairlie.

At Eshowe 2 companies DLI (25 of them mounted, under Maj J Nicol (210).

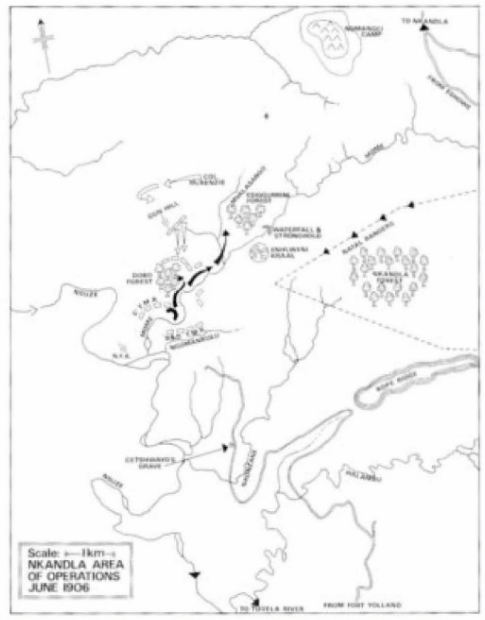
At Gingindlovu: Half company DLI (55).

All these units, with the exception of the TMR and Royston's Horse, were established Natal military units. Royston's Horse had been raised and mobilized within a week and a half, and were commanded by the famous Lt Col 'Galloping Jack' Royston himself.

The general plan of action was to converge with the aforementioned troops (with a detachment of the NC) upon the Nkandla Forest, and for the UMR, detachments of the NC, Natal Mounted Rifles (NMR), DLI and the various reserve forces to patrol and defend the Tugela drifts, and the Helpmekaar area respectively, and in particular to keep an eye on the rebellious and powerful chief, Kula.

THE NKANDLA OPERATIONS

With the scene set for the Nkandla operations, a brief description of the area is necessary. The forests cover an area about 20 km by 8 km. The ground is spectacularly mountainous and hosts an impressive assortment of flora and fauna. The present custodian of King Cetshwayo's grave, Mr Jotham Shezi, claims that his father could remember the presence of elephants in the forest when he was a boy. Mr Des Pollock, of Richmond (Natal), who spent his boyhood years in the area, remembers having seen the skeletons of the last elephants of the area at the foot of Komo Hill, the unfortunate beasts having been driven off the summit to crash to their deaths hundreds of metres below. It is the source of numerous crystal-clear streams, the principal ones being the Mome, Nkunzane and Halambu. Its depths have witnessed the ancient battles between Shaka and Zwide of the Ndwandwe Tribe, including the desperate battle for the possession of the Gcongco spur, a precipitous feature overlooking the Nsuze River, and the famous night action near Komo Hill. King Cetshwayo, who had sought refuge with Sigananda above the Mome Waterfall in 1883, lies buried in a beautiful grove of trees on a ridge near the confluence of the Nkunzane and Nsuze rivers.



First Map

High resolution pdf version of map

The first skirmish in the Nkandla area during the Rebellion of 1906 occurred on 2 May, when a squadron of NC under Capt W Park Grey killed four rebels. On the following day, the magistrate of Mahlabatini, Mr H M Stainbank, was murdered(*) on the south bank of the White Mfolozi River whilst collecting taxes. Mr Stainbank, a member of a prominent Natal family, was camped there with his wife and child, and members of the NP. Local chiefs expressed horror at the murder, giving an indication that an attempt to incite the tribesmen of the area to revolt had been unsuccessful.
[(*)It is generally accepted that Magistrate Stainbank was shot by Cakijana.]

On 3 May, the Dundee-based troops left the town and proceeded to Nkandla. On the same day, Col Mansel's force, consisting of detachments of the DLI's mounted troops, the NMR, Nongqai, NP, NNC, DLI and about 400 loyal levies from Chief Mfungelwa's tribe (incidentally, all levies wore an arm-band of turkey-red and white calico to distinguish them from the rebels - a practice later adopted by the latter to add to the confusion!) was making its way through the Nkandla Forest following a report tha the rebels were in force at Cetshwayo's grave. No precise orders were given, nor were the men informed of their destination; Col Mansel later claimed that it was a major reconnaissance.

The route taken by the troops followed the road past Sibhudeni store (which had been looted) below Sibhudeni peak, and along the forester's path on to the Bope ridge with its spectacular view of the Nsuze River Valley, anc beyond it, the Tugela River. The troops had been fired upon by snipers in the forest, the rebels having used a variety of weaponry and shot ranging from bullets to iron pot-legs. Incredibly, only one man was wounded! The column left the road and moved in single file along the forester's path to the Bope ridge. As they commenced their descent of the ridge, the advance guard, consisting of a troop of the NMR under Lt A H G Blamey, and the Nongqai were charged at by about 200 rebels, who came to within a few metres of the men's rifles. One member of the Nongqai had a hand-to-hand fight with a rebel and was wounded in the head before he managed to bayonet his attacker.

Whilst the attack on the advance was in progress, the rebels attempted to encircle the troops from the rear, but this was checked by the NNC. The biggest surprise that the rebels received, however, was that instead of the troops bullets turning into water, as had been promised them by their witchdoctor, they were taking their toll.

The troops also suffered casualties; Sgt Farrier J Errington was struck above the left eyebrow, the bullet emerging behind his left ear. He fell forward, with his arms on either side of his horse, and the animal rejoined the main body. The horses, too, suffered, resulting in men losing their mounts or battling to control them. One of the most daring deeds of the day was that performed by Lt Blamey himself, when he rescued Tpr Dick Acutt from certain death as the latter was struggling to mount his terrified steed. As the rebels closed in on Acutt, Lt Blamey charged to his rescue. As he grabbed Acutt's wrist, Acutt fainted and Lt Blamey summoned all his strength to pull the limp body over his own horse, galloping back to the main body, followed by a shower of missiles ranging from pot legs to assegais.

Blamey was recommended for the Victoria Cross, but was awarded a Mention for Distinguished Conduct in the Field.

The rebels suffered heavy casualties in the Bope ridge action being mainly members of Sigananda's tribe. Fifty-five bodies were counted, but many others died later from their wounds. When the rebels regrouped at King Cetshwayo's grave, Bambata, who had not done much fighting, faced a mob of angry women who demanded their husbands' and sons' return, especially in view of the fact that the bullets had not turned into water as promised. Some of the elders also criticised his meagre participation, even suggesting that he be turned over to the White men.

Bambata, finding himself somewhat unpopular and fearing for his life, rode off to Macala Mountain some one or two hours later.

Col Mansel decided against pursuit of the rebels, and returned to Fort Yolland via the Nsuze Valley road late that night.

By the middle of May the Nkandla area was swarming with troops. Bambata, by this stage having been joined by Mehlokazulu, son of Sihayo of Isandlwana fame, and a very influential addition to his ranks, remained in his hideout at Macala, whilst some 1 000 rebels under Sigananda were reported to be camped at Cetshwayo's grave. With this information in Col McKenzie's possession, he planned a three-pronged attack on the grave on 16 May. Col Barker and his Transvalers were to move from Ntingwe down the Nsuze; Col Mansel to move down from Fort Yolland and up the Nsuze. Col McKenzie, assisted by Col Royston, was to move along the Nomangci ridge and descend the almost precipitous Gcongco spur, near the confluence of the Mome and Nsuze rivers. Col Leuchars, then at Middle Drift, below Kranskop, was instructed to attack Bambata at Macala. All troops were to arrive at their destination at 11h00 but Col Mansel's column arrived late, resulting in a gap in the movement through which the rebels poured and retreated into the fastness of the Mome Gorge. That night, the troops bivouacked near the confluence of the Mome and Nkunzane rivers. During Col Barker's movement, as his troops passed through the treacherous Msukane gap, they were attacked by some of Bambata's rebels. The attack was beaten off, and Cakijana was wounded in the leg, putting him out of action for the remainder of the Rebellion. He made his way to the Nhlazatshe Mountain, near Mahlabatini, where he took refuge in some caves. Late one night, the missionary at Nhlazatshe, the Rev Otto Aadnesgard, was wakened and requested to accompany his visitors to these caves. He was blindfolded both prior to his departure, and upon his return. There he came across a wounded Black man. Rev Aadnesgard was convinced that he had treated Bambata, but it was almost certainly Cakijana.

Col Leuchar's arrival cut off the rebels' retreat to Macala, but they disappeared into the depths of the Qudeni Forest. Whilst strategically unsuccessful, the operation was a logistical victory for Col McKenzie, for Lt W H London and his levies captured a large number of cattle and goats, effectively depriving the rebels of their main food supply. Col McKenzie's subsequent action resulted in even more being rounded up, dealing Sigananda such a severe blow that it almost certainly was influential in his actions, described later.

The conditions at the grave were shocking; no picks or shovels had been taken, and very soon the area became insanitary. To make matters worse, the body of a dead rebel was discovered upstream from where the troops water was drawn, resulting in the camp being known to the men as 'Stinkfontein'.

Col McKenzie then decided to follow up his operations with an attack on the Mome* Gorge (*Pronounced 'Mawmeh'). As he deployed one of the NFA's guns on a hill overlooking the Mome Valley, a message reached him from one of his spies that there was a general desire by the rebels to surrender. Proceeding to the gun position, accompanied by Col Sir Aubrey Woolls-Sampson (the Chief of Staff), Col Royston and Capt B J Hosking, Col McKenzie met with the rebel messengers and informed them that he would give Sigananda until 11h00 on Sunday

20 May to surrender. On the 20th, there was no sign of any surrender by Sigananda but, that evening, more emissaries arrived, claiming that due to the density of the forest, they had been unable to locate Sigananda. McKenzie extended the deadline to 22 May and the rebels undertook to inform Sigananda's son, Ndabaningi, of his decision. The next two days were spent by McKenzie making careful sketches of the area of the Mome. On the 22nd, a message was received from Sigananda informing Col McKenzie that he wished to surrender in Nkandla, as he was an old man and this would save him a long and arduous journey. Col McKenzie agreed to meet him at 11h00 on 24 May.

Leaving Col Barker in charge of the remaining troops at King Cetshwayo's grave, Col McKenzie, with RH, the NDMR, ZMR and 2 companies of the DLI, ascended the Gcongco and Denga ridges en route to Nkandla. To give an indication of the nature of the terrain, despite the cold weather, and the fact that the horses were being led, 14 had to be abandoned, three dropped dead on the hill, and one of the Native levies died from heart failure before reaching the summit. The force reached Nkandla at 17h00 that evening. Doubt about the rebels' sincerity to surrender was raised when it was reported that the foreman of a road party named Walters, had been murdered next to the Mbiza stream, some 16 km from Nkandla.

The time for the surrender came and went, and it became apparent to Col McKenzie that Sigananda had been playing for time. Somewhat annoyed by this deception, he decided to smash the rebels' resistance once and for all. He received intelligence reports that Bambata was in hiding in the Ensingabantu Forest on the Qudeni Mountain, intending to regroup with his followers and join Sigananda. Col McKenzie issued orders for the men to prepare for a night march to Ensingabantu in order to encircle the rebels. They had to travel through very difficult terrain, and their objective was reached at 04h00, but mist delayed any further movement and by 07h00 when it lifted, the rebels had escaped. The exhausted troops returned to Nkandla, having travelled about 90km in two days.

At this time, Maj Gen T E Stephenson, Imperial Force Commander in Transvaal, arrived in Nkandla to witness the operations. Col McKenzie's camp was moved to Nomangci, between Nkandla and the headwaters of the Mome.

For the next ten days, Col McKenzie drove the Nkandla Forest, surrounding a different section of it every day. On 29 May, a sharp action was fought in the Tathe* Gorge (*Pronounced 'Taateh') north of Mome, resulting in forty rebels being killed, and hundreds of cattle being captured. It was clear that the rebels had intended making a firm stand in the Tathe, but the two sweeps of the gorge had been too much for them. Then, on 1 June, two guns and two pom-poms of the NFA were deployed on what has since become known as Gun Hill. From 06h30 they poured continuous shell-fire into the Mome Gorge, concentrating on the area around the 'Stronghold'. Col Mansel's guns at the mouth of the Mome also fired up the gorge, whilst at 07h30, a strong force of 100 Nongqai under Insp C E Fairlie, 400 RH under Col Royston, 150 ZMR under Maj W A Vanderplank, 140 DLI under Maj G J Molyneux, 100 NP under Sub Insp F B E White and 800 levies under Lt London, commenced driving down the gorge. Several shells burst beyond the 'Stronghold' amongst the troops, and one of the levies was struck on the leg by a shell fragment. Those observing the movement were amazed how, only 20 minutes after entering the forest, the troops disappeared from both sight and sound. Amazingly, only three rebels were killed, but 24 surrendered. Interestingly, women poured out of the bush and made their way to Gun Hill, only to return to the bush after the action!

Although there was still no sign of Sigananda, his Enhlweni kraal was destroyed. A gun and a pom-pom remained on Gun Hill the following day, keeping up a continuous fire until 19h00 in order to prevent the rebels from returning to the area of the 'Stronghold'.

Then, on 3rd June, a section of RH, DU and NDMR were placed in line formation to drive the forest from east to west. Lt London's levies operated on the right flank of RH. In the heart of the forest, at Manzipambana, some of RH became detached from the main body and were ambushed by a group of rebels vastly superior in number. Only the timely arrival of Col Royston with reinforcements prevented a disaster. Four of Capt E G Clerk's men were killed, and ten wounded. One died on the way back to camp, having been struck in both lungs by a dum-dum bullet. All are buried in the Nkandla cemetery, and their graves have unfortunately become terribly neglected and overgrown by brambles. The action at Manzipambana lasted only some 15 minutes, but can be described as one of the most closely-fought of the campaign. This drive resulted in 150 rebels being killed, and over 200 head of cattle being captured.

The Nkandla bush drives continued relentlessly, with little success. It was as though the rebels had simply vanished. Then, on 9 June, Col McKenzie received the breakthrough he so desperately needed.

THE BATTLE OF MOME GORGE

Three members of the ZMR, Lt J S Hedges, Sgt W Calverley and Sgt S Titles tad, all of them members of old Zululand families, had been relentlessly trying to locate Sigananda. One of the rebels of Sigananda's tribe had surrendered at Nomangci camp, and had been recognized by Sgt Calverley as an old acquaintance. He persuaded this man to act as a spy, and on the 9th was taken into the Mome bush by the two sergeants, and told to locate Sigananda's son, Mandisindaba, who was also well known to Calverley. This was done and soon Mandisindaba appeared with his family, requesting protection as he was tired of the rebellion. Col McKenzie agreed, on condition that he assisted with the location of Sigananda. Not only did Mandisindaba achieve this but, whilst in the gorge, he came across a rebel who was also in search of the old chief, with a message from Bambata to the effect that he (Bambata) and Mehlokazuhi were en route from Qudeni with a total of 20 companies (a company ranged from 50 to 100 men) totalling over 1 000 men that night, and intended camping at the confluence of the Mome and Nsuze rivers.

Mandisindaba rejoined Calverley and Titlestad who conveyed this vital item of intelligence to Lt Hedges. Once convinced of its accuracy, Col McKenzie was briefed at 21h30 and he immediately sent Troopers Johnson, Dealy and Oliver to Col Barker, who was still camped in the vicinity of Cetshwayo's grave. This feat alone deserves special mention; they had to ride some 23 km through rebel country, as well as through the Nkandla Forest in the dead of the night, reaching Col Barker at 01h15. They presented the following message to him:

'Zululand Field Force,

Camp, Nomanci [sic] Ridge,

9th June 1906

From O.C. Troops to Col Barker

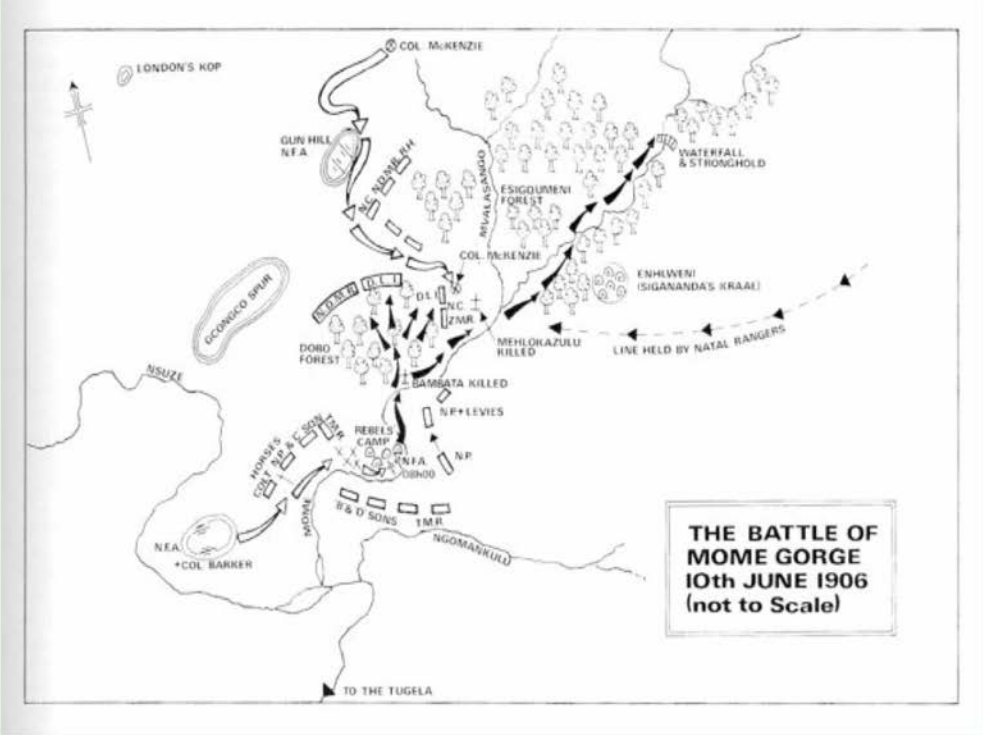
On receipt of this despatch, you will please move AT ONCE with all available men (leaving sufficient for the defence of your camp) to the mouth of the Mome Valley. I have information that an impi is coming from Qudeni to enter the Mome Valley between this and tomorrow morning. Please try to waylay this impi and prevent them from entering the Mome, and at daylight block the mouth of the Mome at once. It is anticipated that they will not enter the Mome till daylight. I have reliable information as to almost the exaa spot Sigananda is in and I am moving down to surround him. He is supposed to be just below the Mome stronghold, a little lower down than where we burnt his kraal. I will cut off this position at daylight and drive down towards you, so please do all you can to prevent his escape, and co-operate with me generally.

At daylight, please send the Zululand Police and Native levies up to Sigananda's kraal, which you burnt the day we attacked the stronghold, where they will join my forces. You must take your gun and Maxims in case you meet the impi, which is reported to be of strength. Look out for my signals.

ADDRESSED: COLONEL BARKER,

CETSHWAYO'S GRAVE

Very urgent. Sent 10.30 p.m.'



Second Map

Col Barker roused his officers and men, read the letter to the former and leaving a large enough force to defend the camp (which had been moved some 5 km south of Cetshwayo's grave), set out at 02h00 with 'B', 'C' & 'D' Squadrons, TMR, 90 NP, 1 section (2 guns) NFA; one Maxim gun, one Colt gun; 100 Nongqai and about 800 Native levies under Chiefs Mfungelwa and Hatshi. When they approached Cetshwayo's grave, Insp CE Fairlie with his Nongqai and the levies swung right and took up a position overlooking the small neck in the bend of the Mome River. His task was to stop the rebels if they tried to pass through the neck. If nothing had happened by daybreak, they were to move to Enhiweni and co-operate with Col McKenzie. As he continued along the track at the mouth of the gorge, Col Barker noticed some 60 fires burning in the mealie field in the loop of the Mome River. Moving to higher ground, he confirmed that the rebels were encamped there, and commenced the deployment of his troops. 'B' and 'D' Sqns TMR were placed on the ridge immediately east of the Mome; 'C' Sqn and 50 NP with a Colt gun occupied the eastern face of the low ridge west of the entrance to the gorge, and the rest of the NP (excluding the gun escort) were placed in reserve behind the west ridge referred to. Their task was to intercept any of the rebels attempting to escape into the Nsuze Valley. The guns were taken up the southern slope of a hillock opposite the entrance to the gorge.

The mealie fields in the foreground are where the rebels camped on the night of 9 June 1906. The bed of the Mome River can be seen in a sweep on the right center of the photograph. The high ground on the left is the position of B and D Sqns, TMR. Lt Forbes Maxim fired from the left of the erosion. The high ground, right, is the position of C Sqn, TMR, the Colt gun and NP. Lt Col Barker and the gun were positioned on the hill in the middle foreground at the entrance to the Gorge.

What of the rebels, and why had they chosen to enter the Mome Gorge?

Evidently, Bambata had attempted to recruit numerous influential chiefs to his cause. Amongst those whom he had managed to convince were Mangati (son of Godide and therefore grandson of Ndhlela, one of Dingaan's two principal indunas), whom it was alleged was encouraged by King Dinizulu to combine forces with Bambata and Mehlokazulu. It was possible that Dinizulu had done so, despite his earlier assurance to the government of his loyalty, because of reports which he had received from Sigananda that the White soldiers were desecrating his father, Cetshwayo's grave.

After the Bope ridge fight, when Bambata had withdrawn to Macala, Sigananda had sent him a message demanding that he return to the Nkandla, which had originally been chosen as the principal rallying point. The rebels commenced their movement from Macala on the evening of 9 June, with the men leaving in batches. It will be recalled that Col Barker had moved his camp away from King Cetshwayo's grave, and sent most of his wagons on to Fort Yol land, to give him greater mobility. This move was noted by the rebels, some of whom believed that Col Barker had left the area as well.

On arrival at the Mome, possibly having travelled via the Tathe mouth, Mangati had moved upstream and bivoacked at the foot of the waterfall which tumbles down from the area of the 'Stronghold', whilst the main impi, with Bambata and Mehlokazulu, both of whom believed that Col Barker had withdrawn completely, were content to bivouac at the mouth of the gorge, and move in to join Sigananda the next day. As it was, they were awoken at 03h30 on the 10th by an umfana (young boy) with the news that 'wagons' were approaching (these were in fact Col Barker's guns and ammunition wagons). Ndabaningi (Sigananda's son) however decided to follow Mangati with his section of the Rebels to the waterfall. As it turned out, the troops' presence was confirmed by some scouts who then roused the main impi, and formed them into an umkumbi or close circular formation, to be addressed and prepared.

At the same time that Col Barker's force was starting its movements, so too were the troops on Nomangci. The plan was for them to act as a stopper group at the top and along the sides of the Mome Gorge, once Col Barker had pushed the rebels up and into Col McKenzie's net. But what is the Mome gorge really like? One Alf Hellawell's description says it all:

'The geological contractor entrusted with the job by the prehistorical Jovian architect must have muddled his job, and in an effort to smooth things down a bit for the clerk of works' inspection, allowed the whole box of tricks to slip through his grasp. And, when things cooled sufficiently to enable his handiwork to be seen, he was so ashamed that he proceeded to plant trees to hide as much as possible the frightful mess he had made'!

At 03h00 the Natal Rangers under Lt Col J Dick, left camp with Lt Col Shepstone as guide. They took the Eshowe road, then branched off near Mabaleni Hill, on to the Bonvana ridge. At the same time, 140 men of the DLI under Lt Col J S Wylie marched along the Nomangci ridge towards London Kop, a prominent hill overlooking the plain just before it drops into the Nsuze River Valley. Half an hour later came 'C' Squadron, NC under Capt G R Richards, as Col Mckenzie's bodyguard, followed by 100 NDMR under Maj Abraham, 100 ZMR under Maj Vanderplank, one 15-pr and two pom-poms, NFA, a Maxim detachment and RH, under Lt Col Royston himself, took the same route as that of the DLI, Col McKenzie gave instructions for the searchlight at Nomangci to remain in operation, as a ruse for making the rebels believe that the camp was still occupied. All mounted troops were ordered to dismount, and to ensure that nosebags with feed were attached to the horses to prevent them from smelling one another and perhaps giving away their presence by neighing.

Col Barker's orders were that no shots were to be fired until daybreak, when a round from one of the 15-prs on the koppie at the entrance to the gorge was to be taken as a signal for a general fusillade. Col Barker decided to remain at the gun position, from which, despite the misty conditions, he had a good view of the rebels' camp site and his own troops dispositions. It will be recalled that Insp Fairlie had been allocated the task of occupying the high ground overlooking the neck. On arrival at his position, he found the rebels bivouacked immediately below him, and accordingly detached 20 Nongqai and some 400 levies and ordered them to occupy the ground north of him,

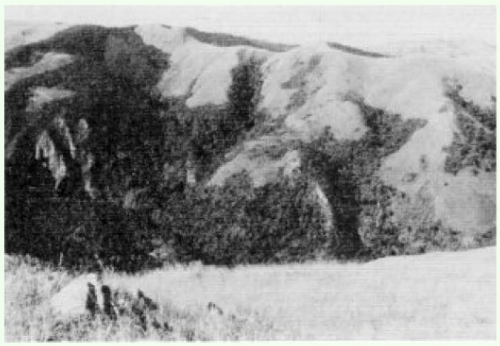
and opposite where the Dobo Forest (the so-called 'pear-shaped forest') meets the Mome River.

At 06h50 as it was growing light, Capt H McKay of 'D' Squadron, TMR, only some 200 metres from the rebels, observed them forming up into companies and, fearing that he had been observed and that the rebels were about to slip through his grasp, consulted with Lt R G Forbes on his left, and agreed to let Forbes open fire with his Maxim.

At virtually the same time, Col Barker observed the rebels forming up into their umkumbi unaware of its relevance. As the Maxim opened fire, virtually simultaneous volleys were fired by all the troops, both east and west, including the Colt gun. At this time too, Col Barker was about to order his guns to commence firing, when he heard the opening shots of battle. He immediately ordered the section commander to open fire.

Once again, it is necessary to return to Col McKenzie, who was about to deploy his troops in a sweep through the Mvalasango Forest, where he thought Siganandа to be hidden.

The ZMR, DLI and some levies were about to advance when firing was heard from the valley below. Col Royston suggested that the firing was coming from the direction of the Nsuze River, and that Col Barker had surprised the rebels before they had entered the Mome. Col McKenzie recalled the troops and started to gallop towards the Gcongco spur. However, as he was galloping along the ridge near Gun Hill, he observed the flash from one of Col Barker's guns through a slight clearing in the mist. He ordered 'fours about' and the force galloped up to Gun Hill, where the gun and pom-poms were deployed. Col McKenzie led his men in a gallop down the almost precipitous slope from Gun Hill to the upper edge of the Dobo Forest. The NC, DLI, NDMR and RH dismounted and Capt Bosman of Col McKenzie's staff was ordered to deploy some men from the NC, DLI and NDMR around the Dobo Forest to prevent the rebels' escape through that route. The remainder were positioned across the Mome at about the point below Siganandа's Enhlweni kraal.



The site of Enhlweni Kraal, on the fringe of the Nkandla Forest, in May 1988. The vegetation has changed little in 82 years. The 'Stronghold' lies to the left of the krans on the left of the photo.

They arrived not a moment too soon, because the rebels were starting to retreat up the Mome and into the Dobo Forest. Col Barker moved his guns at about 08h00 to the neck above the rebels' camp site, and searched the Dobo from top to bottom with heavy shell fire, whilst the gun and pom-poms on Gun Hill raked the valley in the vicinity of the 'Stronghold' with fire.

The rebels, finding their escape route up the gorge cut off, tried to escape up the Dobo, making use of whatever natural shelter was available, feigning death, climbing trees, hiding behind rocks and in overhangs. The father of Mr 'Zulu' Green of Port Edward was in the sweep. He heard a noise in the tree above, saw a rebel clinging on to a branch and took aim. The rebel looked down at him and exclaimed: Hau, mnumzane! ('oh, sir!'), and he let him go. The troops at the bottom of the dobo commenced driving upwards, but were recalled by Col McKenzie and directed to drive from above downwards, so that they would not be at a height disadvantage to the rebels. One or two rebels, feigning death, waited until their adversaries were upon them and suddenly 'awoke', grasping at their arms. Pte L E Lazarus of the DLI had his rifle seized by a Rebel whilst he was passing over a rock, and had a hand-to-hand struggle before one of Lazarus's section members shot the Rebel. This commenced at about 14h00.

During this downward drive Mehlokazulu was killed. He had been wearing a new pair of riding trousers, shirt, socks and an overcoat, whilst one of his servants had been carrying a pair of new boots. Today, a wild banana tree

marks his grave. Parts of his skeleton may be seen lying on the surface, entwined by dense forest vegetation.

By 16h30 approximately three-quarters of the Dobo Forest had been swept. Due to the nature of the forest, which was some 1 200 metres across at the top, and only 250 metres wide at the Mome River, some of the Nongqai began to overlap one another, and Insp Fairlie, fearing that this would lead to them shooting one another, ordered his bugler to sound the 'assembly'. The rest of the troops assumed that this order applied to them as well, and the drive came to a halt, even before the next forest - the Mvalasango - had been driven. This undoubtedly resulted in many of the Rebels escaping - possibly as many as 100, according to Capt J Stuart, the Intelligence Officer. It had been assumed that Siganandа had been hiding in the Mvalasango, which bearing the above incident in mind, would have deprived Col McKenzie of one of his prime trophies. As it was later established, the wily veteran had in fact taken cover in a small gorge on the west of the Mome, just above the waterfall.

The rebels lost heavily in the battle of Mome Gorge. Officially, about 575 were killed, but this figure would have been far higher had not Insp Fairlie unwittingly halted the drive with the order to assemble. With few exceptions, the troops showed the rebels no mercy, and extensive use was made of dum-dum bullets. The late Maj William Francis Barr told me some years ago that 'their orders were to kill the "niggers" and the most effective way of doing it was with a dum-dum. Of course we used them'. (Maj Barr served throughout the Rebellion with the NDMR). Six important rebel leaders were amongst the casualties; Bambata, Mehlokazulu, Mteli, Nondubela, Mavuguto and Lubudhlungu. The Natal Field Force also suffered, but minimally in comparison. Capt S C Macfarlane, who commanded 'C' Squadron, TMR was the first casualty, possibly killed by one of his own men when he pushed too far forward in the opening stages of the action at the mouth of the gorge; Lt C Marsden (RH) and Tpr F H Glover (one of the ILH contingent of the TMR) were mortally wounded. Lt Marsden is buried in Durban, whilst Capt Macfarlane and Tpr Glover lie buried in the neat cemetery outside Eshowe.

There exists to this day a great deal of doubt as to whether Bambata was killed in the Mome Gorge, possibly due to the premature halt to the sweep of the base of the Dobo Forest, through which many rebels managed to escape. This is the official version of his death:

Shortly after the shelling of the Dobo Forest, a native levy on the left bank of the Mome River noticed a solitary, unarmed rebel making his way upstream, walking in the water. Just behind the rebel, on the right bank, was another levy. The rebel left the water to move along the right bank, having observed the former levy, but not the latter. The latter, now on the same bank as the rebel, thrust his assegai into the rebel with such force that it bent the blade and could not be removed. The rebel collapsed, and the levy was joined by the other, who raised his assegai to finish off the victim. The rebel suddenly grasped the assegai with both hands and tried to wrest it from the levy's grasp. During the two levies' attempts to overpower the rebel, a member of the Nongqai arrived and shot him in the head. It was only on 13 June that a party under Sgt Calverley was sent back into the gorge to obtain proof of Bambata's death. This same rebel's body was found, already in an initial stage of decomposition, and identified as that of Bambata. The head was removed, placed in a saddlebag and taken to Nkandla where it was identified. Official reports emphasize the respect which was shown for the head, and that only a selected few were allowed to view it. A photograph shows some troops from the DLI guarding a tent 'containing Bambata's head', but one of the reports mentions that it was placed in Col McKenzie's wash basin, a fact that he was unaware of until he found it is his tent Again, officially, it was returned to the Mome Gorge and buried with the body on the right bank of the river. However, a photograph which appeared in the Nongqai magazine in September 1925, boldly claims that the skull, mounted on a shield, is that of Bambata. The present occupants of the kraal where the rebels camped, and those of neighbouring kraals, are emphatic that Bambata is not buried in the Mome Gorge. Interestingly, his wife Siyekiwe, and daughter Kolekile, are reported to have disappeared some time after the Rebellion had ended, and made their way to Mocambique. Some of Siganandа's sons, when asked yean later to point out Bambata's grave, said that he was not buried there, but had escaped to 'Portuguese' (Lourenco Marques - nowadays Maputo).

Whatever the truth, the decapitation led to an uproar both in Natal and overseas, but it certainly had the effect of causing nearly 1 000 rebels to surrender to the authorities.

To return to the batfiefield, as the troops emerged from the Dobo Forest, they were ordered to march back to their respective camps, the last being the DLI and native levies. The DLI reached camp at 22h30, having been on the move for 19« hours, and the men slept like logs.

THE SURRENDER OF SIGANANDA

The only obstacle facing Col McKenzie in the mopping up of rebel activity in the Nkandla area, was Sigananda. Once again Sgt Calverley played a key r6le in achieving his surrender. Calverley had sent a message into the forest that he wished to see his old friend. His reply came in the form of a guide who told Calverley that he would lead him to the old chief, who was in a secluded spot in the forest. Accompanied by Lt Hedges, Calverley made his way to the rendezvous and persuaded Sigananda to surrender, because '. . . they were going to set the whole of the forest alight.' This Sigananda did two days later, on 13 June 1906. Calverley personally went to collect him, picking him up like a child, and placing him on a spare horse. Later he was transferred to a cart and taken to Nomangci camp. Col McKenzie was away, and despite the fact that Lt Col Wylie of the DLI was acting in his absence, his surrender was accepted irregularly by an officer of junior rank, an action corrected by Col McKenzie upon his return to Nomangci a couple of days later. Asked how he had managed to elude his pursuers so effectively, Sigananda told McKenzie, 'I never had occasion to move very far. When your big guns shelled in one direction, I got behind a rock in the opposite direction. On the day that you burnt my chief kraal, your troops passed quite close by they did not see me...

On 16 June, Sigananda was taken to the gaol at Nkandla and was court martialled on the 21st. Despite being granted whatever was required in the way of comforts during his short imprisonment, he died at midnight on the 22nd, and was buried on the Nkandla commonage. His grave was marked until a few years ago by a ring of gum trees, but these have been felled and the site is very difficult to detect.

THE END OF THE REBELLION

Whilst the battle of Mome Gorge definitely broke the back of the Rebellion, sporadic outbreaks of violence continued. On 19 June, the store at Thring's Post near Mapumulo was attacked. This precipitated a great deal of violence in Messeni's ward in the Mapumulo/Umvoti area, but space precludes discussion of this chapter of the Rebellion.

On 11 July, Messeni (also spelt Mseni) and Ndlovu ka Timuni (a Zulu - this area was occupied by the Qwabe clan) were captured while on their way to surrender, and the Rebellion came to an en& The government, convinced of King Dinizulu's complicity in the Rebellion by statements made by Bambata's wife, and corroborated by others, decided to arrest him on a charge of high treason. Dinizulu was fetched by ambulance from the vicinity of his Usutu kraal and taken to Col McKenzie at Nongoma, from where he was transported to Greytown for trial. He was found guilty of high treason on 3 March 1908, although many other charges were either withdrawn or not pressed. He was sentenced to four years imprisonment for assisting the ringleaders Bambata and Mangati, and for having harboured and concealed 125 rebels at various times from May 1906, until his arrest. For harbouring Bambata's wife and children, he was fined UK PNDS 100 or 12 months imprisonment. He was also deprived of his position as government Induna. Dinizulu was first moved to Pietermaritzburg and then to Newcastle to serve his sentence but, with the advent of Union in 1910, his old friend Louis Botha, who had helped him defeat his enemy Zibepu with his New Republicans at the batfie of Tshaneni (near Mkuze) in 1884, had him released and transferred to the farm 'Uitkyk' between Middelburg and Witbank in the Transvaal, where he died on 18 October 1913. He was buried 'with his fathers' (the ancient Zulu kings) at his Nobamba kraal on the banks of the Mpernbeni River, in the beautiful eMakosini valley of Zululand.

The cost to Natal was considerable. Besides the lives that were lost, the Rebellion cost UK PNDS 883 576 7s 2d, and this excluded the lump sum gratuities paid in respect of injuries as well as the UK PNDS 5 912 4s Od paid from ordinary revenue to disabled members of the Natal and Transvaal militia or their next of kin.

Of the Mome Gorge, very little has changed. Life continues and the battle is but a blurred memory in the minds of the local villagers.

The Rebellion is often used to ascertain the ages of elderly Blacks in Natal ('Were you born before or after Bambata?')

The koppie where Col Barker stood next to his two NFA guns stands almost as a monument to both rebel and trooper, and at the exact spot where Lt Forbes of the TMR fired the opening shots with his Maxim, one Mnumzane (Mr) Mkhize has built a smart hut, containing an enormous double bed, which he proudly calls: 'Holly Day-yen'!

Appendix K: Management Guidelines for the Karkloof Blue Butterfly (*Orachrysops ariadne*) colony adjacent to the Nkandla Forest Reserve

Management Guidelines for the Karkloof Blue Butterfly *Orachrysops ariadne* colony adjacent to Nkandla Forest Reserve

Compiled by Adrian J. Armstrong (Animal Ecologist, Biodiversity Conservation Advice) using information provided by Sheng-Shan Lu (University of Natal, Pietermaritzburg).

The Karkloof blue *Orachrysops ariadne* is a small, blue butterfly, the adult males being brighter than the females. This butterfly is classified as 'Vulnerable' and only five colonies of the species have ever been recorded, one of which no longer exists presumably because its habitat has been transformed by alien plants. The butterfly only occurs in Moist Midlands Mistbelt. The Karkloof blue is not known to occur in any protected area managed by the KwaZulu-Natal Nature Conservation Service. The butterfly is not likely to be found in a protected area, according to its modelled distribution and the status of potentially suitable habitat in protected areas. There is a very strong colony, however, just outside the boundary of the Nkandla Forest Reserve. Good management of this population is imperative because of the fact that it is a relatively large colony and the surrounding landscape is not transformed in comparison with the other known sites.

Life history details

1. The adults fly from mid March to late April. The males emerge two weeks before the females.
2. The females lay their eggs on the lax variety of Wood's indigo plant *Indigofera woodii* var *laxa*. The eggs take between 10 and 30 days to hatch.
3. The young caterpillars crawl down to the ground and begin an association with the host ant, the Natal sugar ant *Camponotus natalensis*. The ants are most active on the ground during mid to late summer.
4. The caterpillars pupate underground in the ant's nest.

Habitat requirements

5. Moist Midlands Mistbelt grassland where the oviposition (host) plant, the lax variety of Wood's indigo, grows and the host ant, the Natal sugar ant, occurs. Suitable sites for Karkloof blue colonies occur on gentle to moderately steep, southerly-facing slopes.
6. Large numbers of flowering herbs to provide nectar for the adults.
7. Burning of the grassland to maintain the vigour of the host plants (which are resprouters) and to stimulate germination of the seeds, and to maintain populations of the host ant.

Management guidelines for the Karkloof blue butterfly colony adjacent to Nkandla Forest Reserve

8. Map the distribution of Wood's indigo plant *Indigofera woodii* along the hillside by means of a Global Positioning System using the WGS 84 datum. The resultant map will then indicate the areas of major importance for management.
9. Rotational patch burning of the grassland should be carried out instead of whole-area burns. The period between successive burns on a particular patch should be between two and four years because fire can be damaging to Wood's indigo plants less than two years old owing to their short roots. The grassland must not be burned during the following times: the flight

period of the adult butterflies; when the eggs are on the oviposition plant; when the oviposition plant is flowering (November to April) and before the seeds are mature and are released from the pods (April to mid-July). In particular, no burning must occur between the beginning of March and mid June. Burning sometime between late June and the end of October is best. The exact timing of the grassland burning within the period late June to the end of October will depend on the needs of other important species in the area.

10. Control the invasive alien plants in the grassland and especially in the drainage lines. Remove any exotic brambles, but be careful not to spray the Wood's indigo plants and the indigenous brambles (distinguished from the alien bramble by the dense woolly white undersides of the leaves or other characters). Herbicide should not be applied between the beginning of March and at least the end of June, the period when the Wood's indigo plants are flowering and producing seeds.
11. No goats should be allowed in the area (because they will most probably eat the oviposition plants) and the cattle stocking rate should be kept low to avoid too much trampling of the colony sites.
12. The number of host plants and mean number of Karkloof blue butterfly eggs per plant should be monitored on a two-yearly basis, to measure the effect of the management programme on the butterfly population.
13. Suitable areas of the Nkandla Forest Reserve should be searched for the butterfly, host plant and host ant. A re-introduction project for the Karkloof blue butterfly should be initiated and carried out to completion if the butterfly is absent.

Monitoring of Karkloof Blue Eggs in the Mome area adjacent to Nkandla Forest Reserve

Area in which the eggs are to be monitored

The area chosen for monitoring the number and hatching success of eggs is indicated on the map in Appendix 1. This small valley, with its intermittent stream, was chosen because of its accessibility, because of the large number of the host plants present, and because the quantity of eggs present on the host plants could be counted by a team of at least three staff during one full day (more time could not be allocated to this task).

Location of host plants

The position of host plants was mapped using a GPS on 26 March 2002. Initially the position of every host plant was recorded using the GPS, but it became apparent that the plants were too close together for the GPS readings to discriminate between individual plants. So we decided that all the plants within a 4 m radius of a point should be considered as at that point (the average FOM was less than 4 m). However, the subsequent monitoring of eggs in June 2002 indicated that, although GPS could be used fairly satisfactorily to relocate points, the error in the readings was too great to allow precise allocation of plants to particular points (see the results of the 2002 monitoring). We decided that a more practical method would be to mark each individual plant with a numbered metal stake in the ground, that could be found using a metal detector. This method should be implemented before the next monitoring day providing funds can be obtained to buy the required equipment.

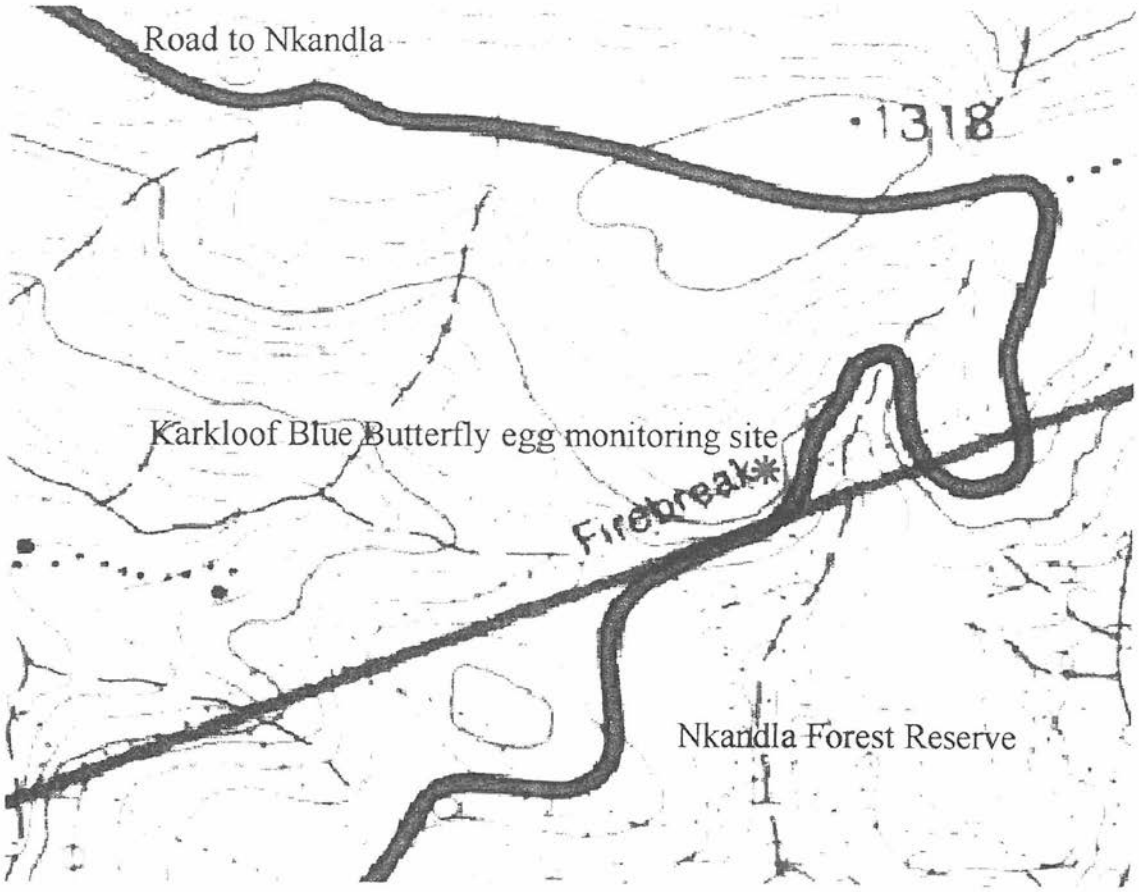
Frequency of monitoring

Monitoring every two or three years should be adequate to track the trend in the number of eggs laid and the hatching success over time.

Results of Monitoring

Year	Number of eggs counted	Number of eggs that hatched	Number of eggs that did not hatch ("damaged")	Number of host plants with eggs	Monitoring Team Members
2002	250	179	71	86	A.J. Armstrong, S. Louw, J. Craigie, B. Kasseepursad, L. Mnguni

Appendix 1 Area chosen for monitoring the number and hatching success of Karkloof Blue Butterfly eggs



Appendix 2 Geographical co-ordinates of the points used in the monitoring of Karkloof Blue Butterfly eggs in June 2002 (decimal degrees, WGS84 datum)

Point	Latitude (°S)	Longitude (°E)	Point	Latitude (°S)	Longitude (°E)
1	28.7097914	31.1414712	26	28.7094319	31.1410581
2	28.7097914	31.1414605	27	28.7094266	31.1410045
3	28.7097914	31.1414444	28	28.7093944	31.1410260
4	28.7097914	31.1414337	29	28.7094105	31.1409616
5	28.7097431	31.1414658	30	28.7092388	31.1411172
6	28.7097002	31.1415088	31	28.7092227	31.1411172
7	28.7097377	31.1414283	32	28.7092227	31.1411601
8	28.7096948	31.1414390	33	28.7091959	31.1412244
9	28.7097753	31.1413907	34	28.7092335	31.1411923
10	28.7098021	31.1413692	35	28.7092495	31.1411440
11	28.7097270	31.1413800	36	28.7092388	31.1412566
12	28.7097753	31.1413425	37	28.7092656	31.1412513
13	28.7097270	31.1413264	38	28.7093247	31.1412405
14	28.7097699	31.1412834	39	28.7092924	31.1411762
15	28.7097699	31.1412459	40	28.7093461	31.1412834
16	28.7096894	31.1412674	41	28.7093837	31.1413156
17	28.7097163	31.1412888	42	28.7094105	31.1412566
18	28.7096948	31.1413317	43	28.7093998	31.1412995
19	28.7096787	31.1413478	44	28.7094534	31.1413585
20	28.7096358	31.1413264	45	28.7094373	31.1412888
21	28.7096626	31.1412888	46	28.7094534	31.1413425
22	28.7096358	31.1412781	47	28.7094749	31.1413425
23	28.7096090	31.1412298	48	28.7094641	31.1414015
24	28.7094909	31.1411762	49	28.7094641	31.1414497
25	28.7094588	31.1411493	50	28.7095017	31.1414015

Point	Latitude (°S)	Longitude (°E)	Point	Latitude (°S)	Longitude (°E)
51	28.7095231	31.1413746	60	28.7096841	31.1414444
52	28.7095446	31.1413317	61	28.7096948	31.1414766
53	28.7095178	31.1413264	62	28.7097270	31.1415141
54	28.7095553	31.1413961	63	28.7096894	31.1415570
55	28.7095768	31.1413961	64	28.7097538	31.1415785
56	28.7095875	31.1414122	65	28.7097592	31.1415356
57	28.7095929	31.1414283	66	28.7098021	31.1416160
58	28.7096143	31.1414390	67	28.7097753	31.1416536
59	28.7096358	31.1414551	68	28.7094428	31.1411172

Appendix 3 Full results of the Karkloof Blue Butterfly egg monitoring

05 June 2002				
Site No.	Plant no.	No. of eggs hatched	No. of eggs damaged	Total No. eggs
1	P1	8	2	10
	P2	4	2	6
2	no eggs present			0
3	P1	2	1	3
4	no eggs present			0
5	scrapped (no plant)			0
6	P1	3		3
	P2	1		1
7	no eggs present			0
8	no eggs present			0
9	P1	1		1
10	P1	1		1
11	no eggs present			0
12	P1	7	1	8
13	P1		1	1
	P2	2	2	4
14	P1	1		1
	P2	1	1	2
	P3		1	1
15	scrapped (on wrong slope)			0
16	no eggs present			0
17	P1		1	1
18	no eggs present			0
19	no eggs present			0
20	P1	2		2
	P2	1		1
21	P1	2		2
22	P1	14	3	17
23	no eggs present			0
24	P1	6	1	7
	P2	2		2
25	P1	2	2	4
26	P1	10	6	16
	P2	4	3	7
	P3	10		10
27	no eggs present			0
28	no plant found			0
29	no plant found			0
30	P1	3	2	5
31	P1	2	1	3
	P2	2		2

Site No.	Plant no.	No. of eggs hatched	No. of eggs damaged	Total No. eggs
	P3	1		1
32	P1	3		3
	P2		1	1
	P3	2		2
	P4		1	1
33	no eggs present			0
34	P1	1		1
	P2	1	1	2
	P3	1		1
35	P1	5	2	7
36	P1		2	2
37	P1		1	1
38	no eggs present			0
39	no eggs present			0
40	no eggs present			0
28 June 2002				
41	P1	1		1
42	P1	1		1
	P2	8		8
	P3	3		3
	P4	2		2
	P5	3		3
	P6	2		2
43	no eggs present			0
44	P1	3	1	4
	P2	1		1
	P3	1	2	3
45	P1	1		1
	P2	1	1	2
	P3	2		2
46	no eggs present			0
47	P1		1	1
	P2	2	1	3
48	P1		1	1
	P2	2		2
	P3		1	1
49	P1	1		1
	P2		1	1
50	P1		1	1
51	P1	1		1
	P2	1		1
52	P1	2	3	5
	P2		1	1

Site No.	Plant no.	No. of eggs hatched	No. of eggs damaged	Total No. eggs
53	P1	1	2	3
54	overlapped with 53			0
55	overlapped with 53			0
56	P1	1		1
57	P1		1	1
	P2	1		1
	P3	2	1	3
	P4	1		1
	P5	9	4	13
	P6	1		1
58	P1	1		1
	P2	2	1	3
	P3	2		2
	P4	1		1
	P5	1		1
59	P1	4		4
	P2	2		2
	P3	2		2
60	no eggs present			0
61	P1	1	1	2
62	P1		1	1
63	no plant found			0
64	no eggs present			0
65	P1	2		2
	P2		1	1
	P3		3	3
66	P1		2	2
67	P1	2	2	4
Total		**179**	**71**	**250**