



**EZEMVELO
KZN WILDLIFE**

Conservation, Partnerships & Ecotourism



UMTAMVUNA NATURE RESERVE

Integrated

MANAGEMENT PLAN

2009 - 2013



Umtamvuna Nature Reserve

*KwaZulu-Natal
South Africa*

Integrated Management Plan: 2009-2013

***Reviewed and edited by
Ezemvelo KwaZulu-Natal Wildlife Management Planning Unit***

***Based on the draft Integrated Management Plan (2008 – 2013) by
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This **Integrated Management Plan (2009-2013)** for Umtamvuna Nature Reserve is recommended by the Reserve Planning Committee (PAMC), a multi-disciplinary team consisting of:


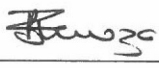
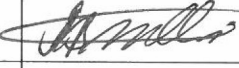

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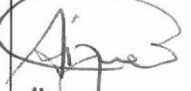
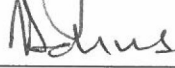
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PREFACE

This Integrated Management Plan for Umtamvuna Nature Reserve is the primary and overarching management document for the Nature Reserve for the period 2009 to 2013. It forms the framework within which the Nature Reserve will be managed and developed towards the achievement of its management objectives derived in collaboration with the Nature Reserve's stakeholders.

The protected area management planning process and the resultant planning documents (elaborated on in the next few pages, 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 Nature Reserve's stakeholders, the general public and specialists during the various stages of plan development and implementation. Although the Integrated Management Plan and its sub-components are five year 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 Nature Reserve's management objectives are operationalised and reflected through a Strategic Management Plan in the Park's operational budget over the next five years. A Business Plan will at the same time actively pursue additional and improved funding and income towards the achievement of the natural and cultural heritage conservation objectives of the Nature Reserve over the next five years.

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

Dr Bandile Mkhize
Chief Executive Officer

Date :

EXECUTIVE SUMMARY AND PURPOSE OF PLAN

This Integrated Management Plan (IMP) includes the management as well as developmental guidelines for the Umtamvuna Nature Reserve (UNR) and is the primary and overarching management document for the UNR for the period 2009 to 2013. The IMP forms the framework within which the reserve will be managed, aligned and developed in an endeavour to achieve the biodiversity conservation, ecotourism and partnership objectives as envisaged and set by the various stakeholders, and refined by the Technical Task Team members during the consultative planning process.

The IMP is based on the Protected Area Reserve Management Planning Process, as required by the National Environmental Management Act (Act No.107 of 1998) and the National Environmental Management: Protected Areas Act (Act No. 57 of 2003), and can only be modified with Ezemvelo KZN Wildlife (EKZNW) approval after consultation with all relevant stakeholders.

The principles underlying the IMP for the UNR are based on general principles guiding the attainment of sustainability – protecting biodiversity; sound resource management; equitable and appropriate community involvement and beneficiation; the creation of viable and sustainable business opportunities; and clear policies, objectives and operational guidelines.

The rationale of an IMP for protected area management is to assist the UNR in ensuring sustainability by protecting the integrity and value of environmental resources, providing measurable benefits to host communities, and enhancing the satisfaction of visitors.

By addressing the needs and expectations of resource managers, communities, and users by defining the processes that contribute to sustainability and monitoring the performance of these processes, EKZNW can ensure that their objectives, as well as those of relevant stakeholders are attained in an acceptable and appropriate manner, consistently.

Through the utilisation of the IMP as a guide for the compilation of the Reserve's Strategic Management Plan and Operational Budget, it is envisaged that UNR's management objectives can be operationalised and reviewed annually, providing timeous changes to the five year plan.

As a document to guide the management of the UNR, based on the inputs of all stakeholders, the IMP also serves as the base document for monitoring both performance and compliance regarding the various management objectives of the UNR.

Recognising the important role the UNR plays in local conservation initiatives, EKZNW, as the conservation authority, commits itself to the implementation of this plan.

PROTECTED AREA MANAGEMENT PLANNING PROCESS FRAMEWORK FOR PROTECTED AREAS

The Integrated Management Plan, its components and authorisation

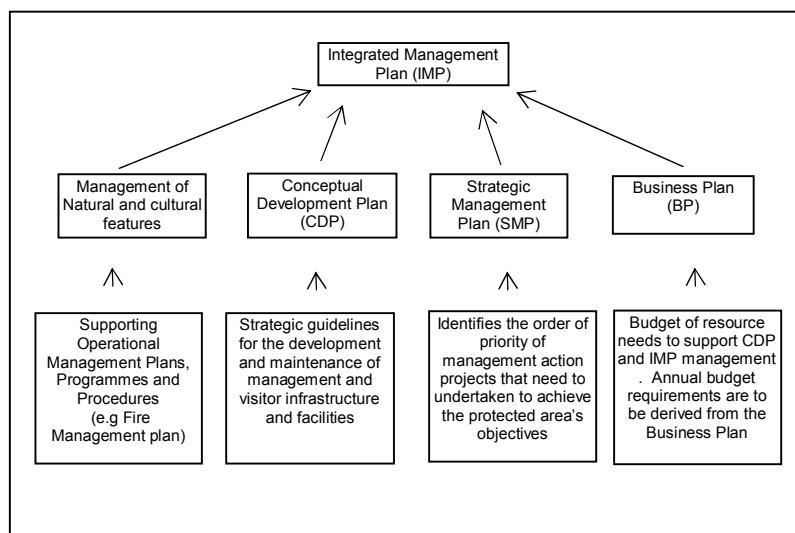
The **Integrated Management Plan (IMP)** is the overarching protected area integrated planning document that describes the administrative and legal framework, contextual background, public participation processes followed, vision / mission statements, management objectives, zonation as well as a management policy framework and guidelines, for a protected area, for a specific 5 year period. The **IMP** forms the framework within which all the other planning components, such as the **Conceptual Development Plan (CDP)**, **Strategic Management Plan (SMP)** and **Business Plan (BP)** are developed. The National Environmental Management: Protected Areas Act 57 of 2003 (NEMPA) considers these plans to be components of the **IMP**.

The **Conceptual Development Plan (CDP)** is an integrated planning document and provides a strategic guideline for the development and maintenance of conservation management infrastructure and visitor facilities / activities within the constraints of the protected area receiving environment. This component will be developed further during the IMP's five-year period. To ensure operational effectiveness, protected areas may require specific Operational plans, programmes and procedures such as Fire management Plans, Wilderness Areas Management Plans, Elephant Management Plans etc, that support the **IMP** and **CDP**. These will be compiled where they do not already exist.

The **Strategic Management Plan (SMP)** is an operational management component that identifies the order of priority of IMP action projects, activities and tasks that need to be undertaken in the achievement of the protected area objectives and attaches key performance areas, responsibilities, timeframes, budgets and resources to each activity. This plan usually takes the form of a Microsoft Access database that 'actions' the Reserve's management objectives and any projects identified by the **IMP**, **CDP** and **Business Plan (BP)**. The **SMP** is a key planning document that also informs the Annual Budgeting Estimates and provides information for Annual Reports.

The **Business Plan (BP)** is primarily aimed at describing the manner in which the **IMP** and **CDP** are to be both financially resourced as well as manpower and capacity needs. It may address issues of operational efficiency and the optimisation of income generated opportunities in order to bridge any possible shortfalls between required operational expenditure and committed provincial government budget allocations. Five year expenditure estimates will inform the development of the **Business Plan (BP)**.

Once the **BP** has been approved, the **SMP** is finalised according to the committed five-year provincial budget allocations for the protected area and other expected financial income.



The process by which the **IMP** plans are developed is in accordance with the requirements of South Africa's environmental legislation, in particular the NEMPA, requiring public consultation and participation, as follows:

- The Protected Area Mission and Objectives contained in the **IMP** are derived in consultation at a Stakeholders' Workshop, the outcomes of which are advertised both regionally and provincially for comment in the next step.
- The **IMP** will be advertised provincially and regionally for public comment before being authorised.
- The **SMP** and **BP** will form the basis for regular progress reporting to the protected area Management Authority and its structures.

The **IMP** and its subsidiary plans are required to be authorised by the Provincial Minister for the Department of Agriculture, Environmental Affairs and Rural Development, in terms of the National Environmental Management: Protected Areas Act 57 of 2003. The IMP and any subsidiary plan is to be forwarded to the MEC on recommendation from the EKZNW Board.

IMP Planning & Review

The IMP requires both annual and five year revision cycles to ensure that the management objectives remain relevant and that management actions are continually improved. The figure below illustrates how the annual and five year planning and review cycles are to be integrated.

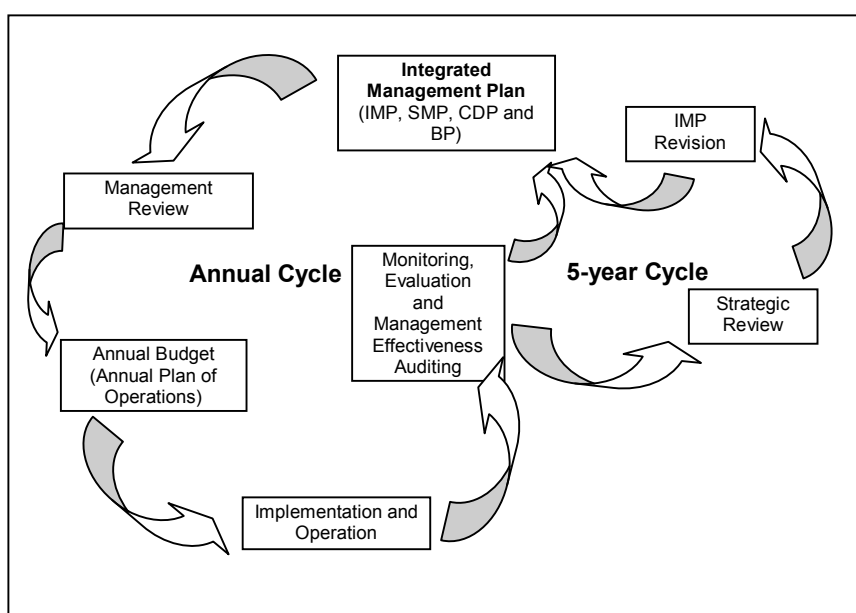


Figure 1: Integrated Management Plans: Aligning Annual and Five year Cycles

DEFINITIONS

Alien Species:

Means species or genotypes, which are not indigenous to Umtamvuna Nature Reserve and the surrounding area including hybrids and genetically altered organisms.

Amafa:

Amafa aKwaZulu-Natali (KwaZulu-Natal Provincial Heritage Agency)

Biodiversity / Biological Diversity:

Means 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:

Means the KwaZulu-Natal Nature Conservation Board as defined by the KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No.9 of 1997).

Buffer Zone:

Means an area surrounding Umtamvuna Nature Reserve that has restrictions placed on its use or where collaborative projects and programmes are undertaken to afford additional protection to the Nature Reserve.

Co-management:

The term 'Co-management' must be understood within the context of Section 42 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).

Cultural Heritage:

As defined in Article 1 of the World Heritage Convention (UNESCO) 1972¹, '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):

Means 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

Means 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]).

¹Convention concerning the protection of the World Cultural and Natural Heritage. UNESCO. Adopted by the General Conference at its seventeenth session, Paris, 16 November 1972. Paris, France.

Ecosystem:

Means 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; and
- 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 IMP, sustainable water production is also specifically included under this definition.

Environmental Degradation:

Means 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.

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; and
- 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]).

Local Community:

Means 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]).

Nature Conservation:

Means 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]).

Nature Reserve

Means Umtamvuna Nature Reserve.

Neighbouring Community:

Means the communities and people permanently living in the local municipal area / s bordering onto the Nature Reserve.

Natural Heritage:

As defined in Article 2 of the World Heritage Convention (UNESCO) 1972² 'natural heritage' is considered 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.

Partnership/s:

Means a co-operative and / or collaborative arrangement between the Nature Reserve management / EKZNW and a third party that supports the achievement of the Nature Reserve management objectives.

Protected Area:

- 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).

Stakeholders / Interested Parties³:

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).

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).

² UNESCO 1972 *Convention concerning the Protection of the World Cultural and Natural Heritage*. Adopted by the General Conference at its seventeenth session, Paris, 16 November 1972. UNESCO, Paris, France

³ Defined in Guideline Document EIA Regulations, National Department of Environmental Affairs and Tourism, April 1998

ABBREVIATIONS

BP	Business Plan (Component of EKZNW protected area management planning process)
CDP	Concept Development Plan (Component of EKZNW protected area management planning process)
DAE&RD	KwaZulu-Natal Provincial Department of Agriculture, Environmental Affairs and Rural Development
DLA	Department of Land Affairs
DPW	Department of Public Works
DWEA	National Department of Water and Environmental Affairs
EIA	Environmental Impact Assessment
EKZNW	Ezemvelo KwaZulu-Natal Wildlife
FPA	Fire Protection Association in terms of the National Veld and Forest Fire Act, 1998 (Act No.101 of 1998)
GIS	Geographical Information Systems
IAP	Interested and Affected Party
IDP	Municipal Integrated Development Plan
IEM	Integrated Environmental Management
IMP	Integrated Management Plan
IUCN	International Union for Conservation of Nature <u>or</u> The World Conservation Union (as commonly referenced)
JMC	Joint Management Committee
KWANECC	KwaZulu Natal Eastern Cape Conservation Committee
KZN	KwaZulu-Natal Province of the Republic of South Africa
LDP	Local Development Plan
MCM	National Department of Marine and Coastal Management
MEC	Member of the Executive Council for DAEA&RD, KwaZulu-Natal Provincial Government
MoA	Memorandum of Agreement
MoU	Memorandum of Understanding
PAMC	Protected Area Management Committee
PPP	Public Private Partnership
ROC	EKZNW Regional Operations Committee
ROS	Recreational Opportunity Spectrum
SA	Republic of South Africa
SAHRA	South African Heritage Resources Agency
SDF	Municipal Spatial Development Framework
SMME	Small, Micro and Medium Enterprises
SMP	Strategic Management Plan (Component of EKZNW protected area management planning process)
SUP	Sustainable Utilisation Plan
TFCP	Transfrontier Country Partnership
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNR	Umtamvuna Nature Reserve
WUA	Water User Association

ABBREVIATIONS USED FOR STATUTES (LEGISLATION)

KZNHRA	KwaZulu Heritage Resources Act, 1997 (Act No. 10 of 1997).
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
KZNNCMA	KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEMPAA	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
PFMA	Public Finance Management Act, 1999 (Act No. 1 of 1999)

1 PURPOSE AND SIGNIFICANCE OF UMTAMVUNA NATURE RESERVE

1.1 Purpose

The purpose of Umtamvuna Nature Reserve (UNR) is to:

- Maintain the Nature Reserve as a natural feature of the landscape including the cliffs, waterfalls, forest patches, river streams and diverse wildlife species;
- Contribute to the achievement of Provincial and National conservation targets through protecting a representative portion of the open grasslands and forest patches such as Natal mahogany, wild figs, swamp poplars, quinine trees and water berry trees of the area and their associated biodiversity, including the ecological and evolutionary processes that generate and maintain this diversity;
- Protect endangered, rare and endemic species indigenous to the area;
- Preserve and conserve the ecological and cultural heritage integrity of the area;
- Provide controlled and equitable access by the public to the area and its resources;
- Contribute to local and regional economies through sustaining good quality water production and by providing a public amenity; and
- Provide a destination for eco-cultural tourism in the KwaZulu - Natal Province.

1.2 Significance

The significant values of UNR include:

- **Natural and cultural values.** Various UNR natural and cultural heritage features are of provincial significance, and incorporate the following:
 - The outstanding natural beauty and aesthetic value of the area being the Pondoland Centre of Endemism and a world hotspot;
 - The diverse system of natural wetlands;
 - The biological diversity of species and habitats with some presently only being protected within this Nature Reserve; and
 - Shelters with implements and San paintings
- Ø **Outdoor Recreation and Eco-cultural Tourism.** UNR provides sustainable outdoor recreation and eco-cultural tourism activities in an area of important natural and aesthetic beauty, and thus to significantly contributes to enhanced regional tourism opportunities for visitors. UNR offers spectacular viewing of the gorge, birding, hiking and picnicking.

2 ADMINISTRATIVE AND LEGAL FRAMEWORK

2.1 Institutional Arrangements

2.1.1 UNR Management Authority

Ezemvelo KwaZulu-Natal Wildlife is the appointed Management Authority responsible and accountable for the Umtamvuna Nature Reserve (UNR). This must be confirmed in terms of Section 38(2) of the National Environmental Management: Protected Areas, 2003 [Act No. 57 of 2003] (NEMPAA) which requires that the provincial MEC assign the management authority for a Protected Area. Many aspects of protected area management are governed by existing policies which are reviewed on an annual basis for ratification by the Board. Staff are encouraged to familiarise themselves with the relevant revisions and to contribute new policy perspectives as decision-making needs emerge, and to critically evaluate current policies. Current policies are binding on all staff, and are contained in a Policy File for ease of reference.

Action Project 2.1.1 (i): Obtain written assignment from the MEC re-appointing EKZNW as the management authority for UNR in terms of Section 38(2) of NEMPAA.

As the current Management Authority, EKZNW is responsible for reporting on the management of the Nature Reserve to the designated KwaZulu-Natal Provincial Member of the Executive Committee and the Premier thus ensuring co-ordination of those matters that may affect UNR through the relevant provincial departments, District and Local Municipalities.

2.1.2 Land Claims and Co-management

There are no known land claims against UNR.

2.1.3 Separation of Authority Functions

Other public service providers within UNR include electricity provided by Eskom and telephone lines provided by Telkom.

Action Project 2.1.3 (i): Update and compile a list of all other service providers in UNR

2.2 Legislation Guiding the Administration of Umtamvuna Nature Reserve.

It is important to note that Umtamvuna Nature Reserve is a protected area in terms of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003 [NEMPAA]). In terms of this Act, any conflicts with other legislation must be dealt with in accordance with Section 7 of NEMPAA. In essence it stipulates that - where a provision of NEMPAA specifically concerns the management or development of protected areas, and there is conflict with other national legislation, the relevant section of NEMPAA prevails.

The operational administration and management of the Nature Reserve is subject to the following key statutes – it is acknowledged that this list is not exhaustive. Managers must familiarize themselves with the purpose and contents of these statutes as well as their subsequent amendments and regulations. Many of these statutes can be downloaded from the following SA Government Documents internet website:

<http://www.info.gov.za/view/DynamicAction?pageid=528>.

Not only do these Acts and Ordinances guide the specific decisions and actions, they also provide the framework for monitoring performance and compliance, and provide guidelines regarding contravention, offences and penalties.

Within the South African context, ensuring compliance to relevant legislation is a must. Therefore it is imperative that all actions undertaken by management are compliant with all relevant legislation such as:

Natural and Cultural Heritage / Resource Management and Development:

- Amafa aKwaZulu – Natali/ Kwazulu – Natal Heritage Act, 1997 (Act No. 10 of 1997)
- Animals Protection Act, 1962 (Act No. 71 of 1962)
- Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965)
- Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
- Constitution of the Republic of South Africa, 1997 (Act No. 108 of 1997)
- Criminal Procedure Act, 1977 (Act No. 51 of 1977)
- Environment Conservation Act, 1989 (Act No. 73 of 1989)
- Forest Act, 1984 (Act No. 122 of 1984)
- Game Theft Act, 1991 (Act No 105 of 1991)
- KwaZulu – Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997)
- KwaZulu Animal Protection Act, 1987 (Act No. 4 of 1987)
- KwaZulu Nature Conservation Act, 1975 (Act No. 8 of 1975)
- KwaZulu-Natal Heritage Act, 2008 (Act No. 4 of 2008)
- KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997)
- National Environmental Management Act, 1998 (Act No. 107 of 1998)
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
- National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
- National Forests Act, 1998 (Act No. 84 of 1998)
- National Heritage Resources Act, 1999 (Act No. 25 of 1999)
- National Veld and Forest Fire Act, 1998 (Act No.101 of 1998)
- National Water Act, 1998 (Act No. 36 of 1998)
- National Water Amendment Act, 1999 (Act No. 45 of 1999)
- Nature Conservation Ordinance, 1974 (Act No. 15 of 1974)
- Traditional Health Practitioners Act, 2004 (Act No. 35 of 2004)

General Management:

- Broad – based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003)
- Communal Land Rights Act, 2004 (Act No.11 of 2004)
- Development Facilitation Act, 1995 (Act No. 67 of 1995).
- Disaster Management Act, 2002 (Act No. 57 of 2002).
- Fencing Act, 1963 (Act No. 13 of 1963)
- Fire Brigade Services Act, 1987 (Act No. 99 of 1987).
- Firearms Control Act, 2000 (Act No. 60 of 2000)
- Intergovernmental Relations Framework Act, 2005 (Act No.13 of 2005).
- KwaZulu Ingonyama Trust Act, 1994 (Act No. 3 of 1994)
- KwaZulu-Natal Planning and Development Act, 1998 (Act No. 5 of 1998).
- Local Government: Municipal Structures Act, 1998 (Act No. 117 of 1998).
- Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000).
- Municipal Services Act, 2000 (Act No. 32 of 2000)
- Natal Town Planning Ordinance, 1949 (Act No. 27 of 1949).
- National Building Standards Act, 1977 (Act No. 103 of 1977).
- National Road Traffic Act, 1996 (Act No. 93 of 1996).
- Occupational Health and Safety Act No, 1993 (Act No. 85 of 1993).
- Restitution of Land Rights Act (Act No. 22 of 1994)
- Restitution of Land Rights Act, 1994 (Act No. 22 of 1994).

- State Land Disposal Act, 1961 (Act No. 48 of 1961).
- Water Services Act, 1997 (Act No. 108 of 1997).

Financial Management:

- Public Finance Management Act, 1999 (Act No. 1 of 1999).

Human Resource Management.

- Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997).
- Compensation for Occupational Injuries and Diseases Act, 1993 (Act No. 130 of 1993).
- Employment Equity Act, 1998 (Act No. 55 of 1998).
- Labour Relations Act, 1995 (Act No. 66 of 1995).
- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).
- Pension Funds Act, 1956 (Act No. 24 of 1956).
- Skills Development Act, 1998 (Act No. 97 of 1998).
- Skills Development Levies Act, 1999 (Act No. 9 of 1999).

Nature Reserve Regulations

EKZNW protected area regulations are enforced in accordance with Section 15 of the Nature Conservation Ordinance, 1974 (Act No. 15 of 1974) read together with the KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997).

2.3 Regional Planning Context and Principles

UNR is a core conservation area forming part of the KZN protected area network and Eastern Cape TFCP. As with all EKZNW protected areas, the intention is to continually improve management effectiveness of UNR in line with the levels adopted for all protected area within the EKZNW protected area network.

In the KwaZulu-Natal Province, the Nature Reserve is situated within the Ugu District Municipality and the Hibiscus Local Municipality.

Alignment with regional plans will assist in developing an effective buffer zone around UNR. Protected Area Management, in collaboration with the designated EKZNW officials, must be tasked to make the relevant inputs whenever these municipalities' Integrated Development Plans and Spatial Development Frameworks are reviewed and updated.

Action Project 2.3 (i): Management, in collaboration with other relevant EKZNW officials, must be tasked with active participation in the review processes of the municipal Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) in order to ensure an effective buffer zone surrounding UNR through an alignment of appropriate land use adjacent to the Nature Reserve.

The Nature Reserve itself has been zoned (See **Par. 2.4**) according to protected area management norms to control various activities and for the achievement of various conservation objectives.

2.4 Proclamation Status of Umtamvuna Nature Reserve:

The Umtamvuna Nature Reserve was established on the 25th June, 1972 by Proclamation 97 of 1971.

Action Project 2.4 (i): Obtain the services of a land surveyor to register the consolidated UNR with the Surveyor General and seek the proclamation of the area by the MEC.

2.5 Local Agreements, Leases, Servitude Arrangements and MoUs

The formal documentation and maintenance of all local agreements, leases, servitude arrangements and MoUs concerning the authorised use of UNR area by beneficiaries other than EKZNW must be undertaken to promote transparency and good governance. All such agreements must be scrutinized by the Manager: EKZNW Legal Services for direction, prior to any appointed EKZNW executive member signing such documents.

The UNR Manager must be familiar with the content of such authorised documents and must ensure that there is compliance with the conditions contained therein. Copies of all documentation must also be filed manually and digitally at the UNR management and regional management offices for easy reference. These copies must be updated in accordance with any authorised amendments.

The servitudes found in UNR are as follows:

Portion 14 of the Farm Umdoni Vale No. 8695

- Subject to a Pipe Line Servitude 94 metres wide
- Subject to a life Usufruct

Remainder of Lot 32 Umtamvuna No. 10988

- Subject to a General Servitude of Right of Way

Remainder of Portion 7 of ERF 32 Umtamvuna No. 10988

- Subject to a General Servitude of Right of Way
- Subject to rights granted to Eskom to convey electricity over the property

Portion 8 of the Farm Lot 32 Umtamvuna No. 10988

- Subject to a General Servitude of Right of Way
- Subject to a Road Servitude 15, 24 metres wide

Sub 11 of Lot 32 Umtamvuna No. 10988

- Subject to a General Servitude of Right of Way

Portion 5 of the Farm Cragadour No. 11435

- Benefit of Rights of Way 15, 24 metres wide

Action Project 2.5 (i): Obtain copies for and review all formal and informal local agreements, leases, servitude arrangements *etc.* pertaining to UNR and document, update, maintain and monitor these appropriately authorised agreements. All informal and revised agreements are to be formalised and approved by the Executive.

2.6 Extending Conservation Land Use Management in Areas Surrounding UNR

Opportunities may arise that will enable the establishment of new formal protected areas or other conservation management areas on land bordering or in vicinity of UNR in collaboration and co-operation with the relevant stakeholder and landowners. This is likely to contribute to the EKZNW conservation planning and Eastern Cape TFCA targets through more effective natural and cultural heritage conservation. Indirectly, new tourism opportunities could also develop with the resulting socio-economic benefits.

All EKZNW officials associated with UNR should remain sensitive to these opportunities and ready to engage with the relevant role-players, assisting them with the most appropriate options for establishing conservation areas. This may be in the form of conservancies, private, community or local authority protected areas, contractual protected areas, public open space or even incorporation of land into UINR and in so doing increasing the extent of core protected areas within KZN and increasing protected area representivity. Alignment with the municipal IDPs must also be actively sought to ensure appropriate land use on the borders of UNR.

Action Project 2.6 (i): Indicate any subsequent purchases of properties, inclusions or disposal of areas, using the correct property description as supplied by the deed of transfer, lease agreement

etc. In cases where agreements are “unofficial”, reference should be made to the relevant documentation.

Action Project 2.6 (ii): Annually explore and investigate opportunities to extend conservation land use in and around UNR.

3 BACKGROUND

3.1 Origin of the Name of the Nature Reserve

The name Umtamvuna is derived from the Zulu word "vuna" meaning reap in English. This word describes the Umtamvuna River that reaps everything in its path when in flood.

3.2 Location and Extent of the Nature Reserve

The 3 257 ha Umtamvuna Nature Reserve is located on the road to Izingolweni, off the R61 to Port Edward, and is the best example of the eastern coastal sandstone region in South Africa, and the only example of Pondoland coastal highland sour veld under coastal management. The fortress-like koppies and sandstone cliffs, grasslands scattered with wild flowers and dense riverine rain forest with numerous pretty waterfalls tumbling into the gorge have a magical quality.

The latitude is -30°53'53.477"S to -31°03'48.827"S and 30°07'13.818"E to 30°11'12.098"E. The GIS flat surface area of UNR amounts to 2632ha. The altitude at the highest point in UNR is 505 metres above sea level with the lowest point being five metres above sea level.

3.3 Previous Land Use

The reserve was inaccessible because it was surrounded by private farmers. Portions of the land were rented to the private farmers by Department of Forestry for the grazing of cattle while most of the land remained untransformed natural land

Action Project 3.3 (i): Update the previous land use of UNR.

3.4 Conservation History of the Nature Reserve

Individual properties were proclaimed at different times as portions of the Umtamvuna Nature Reserve were proclaimed under the Forest Act (Act No.122 of 1984) while other portions were proclaimed under the Nature Conservation Ordinance (Act No 15 of 1974). The reserve was proclaimed to maintain the Reserve as a natural feature of the landscape. This includes the spectacular cliff faces, waterfalls open grasslands, dense forest patches, clear running streams and rivers and the diverse wildlife species associated with all of these.

Initially, the land was under the control of the Department of Forestry however, in 1971, the reserve was transferred to the Natal Parks Board as the management authority. Ezemvelo KZN Wildlife soon purchased the Beacon Hill farm to gain access to the reserve.

Challenges that the reserve have encountered since proclamation include increased poaching with dogs, since the introduction of Reedbuck and Oribi. Other key challenges that the KNR has encountered, and is in the process of addressing, includes alien plant invasions, soil erosion, illegal grazing and poor land management.

Action Project 3.4 (i): Update the conservation history for UNR indicating the importance of the proclamation.

3.5 Climate and Weather

Average rainfall at UNR is 1800 mm per year with peaks of 2486 mm. Average maximum daily temperatures for a year period is 23,16 C, average minimum daily temperature for a year period is 13.15 C. Prevailing winds southerly to south westerly and north easterly.

Action Project 3.5 (i): Maintain the collection and storage of climatic data records. Include the Predictive Mean maximum and minimum temperatures in conjunction with mean rainfall for UNR.

3.6 Physical Description

3.6.1 Topography

The Umtumvuna Nature Reserve has preserved its wild nature through many vicissitudes aided by the nature of the terrain. Precipitous gorges, cut deeply into the Msikaba Formation (Natal Group), wind and twist their way through to the sea.

3.6.2 Geology

The UNR has been witness to many events in geologic time. A sequence of sediments (largely sandstones), often with pebble horizons, commonly known as Msikaba Formation Sandstones (Natal Group), is well developed in the Reserve. This "sandstone" forms the cliffs overlooking the Umtumvuna River and its tributaries, and was deposited about 600 to 800 million years ago. The nature of the sandstone suggests that it was laid down in the shallow water on a slowly sinking floor. For the better part, 300 metres of sediment were deposited.

3.6.3 Soils

No information available.

Action Project 3.6.3 (i): Investigate the soil types and the implications for future infrastructural development.

Action Project 3.6.3 (ii): Identify the biodiversity importance and implications of immature soil profiles for management.

Action Project 3.6.3 (iii): Map the soils of UNR showing areas susceptible to soil erosion.

Action Project 3.6.3 (iv): Write and submit for approval a soil erosion control plan.

3.7 Geomorphology

In places in the Umtumvuna Nature Reserve in the valley, some reconstituted rocks can be found as the somewhat peculiar and rare granites namely the chamockite-granites. Developing through this process of heating in the cauldron of the interior of the earth, and then being squeezed out were younger molten rocks of different ages and composition.

At a late stage in this period when the land was rising, there was a reversal in the trend of the earth's movements, resulting in the mouths of the bigger rivers, such as the Umtumvuna sinking about 30 metres. Solid rock is only found at this depth in the vicinity of the present day mouth of the Umtumvuna River.

3.8 Hydrology

The last 4 kilometres of the Umtumvuna River course from the northern boundary broadens out into what is often said to be the finest estuary along the Natal Coast. The southern boundary of Natal meets the Eastern Cape's northern limit in the middle of the river. Tributary streams feed from high ground, giving rise to a varied habitat with a resultant diversity of plant species.

Action Project 3.8 (i): Write a management plan in order to maintain and monitor the quantity and quality of water in the rivers.

3.9 Flora

Vegetation Types

UNR falls within the Pondoland Centre of plant endemism, part of the larger Pondoland-Maputaland-Albany hotspot, 1 of 34 areas of conservation significance that is globally recognized.

The reserve is characterised by an elevated coastal sandstone plateau deeply incised by the Mtamvuna River. The forest-filled gorge is dominated by Pondoland Scarp Forest (990 ha), an EKZNW sub-type of Scarp Forest. Historically, Scarp Forests acted as Afrotropical refugia and are a contemporary overlap zone between Afrotropical and coastal forest, resulting in higher species richness in Scarp Forests than in either the Afrotropical or Indian Ocean Coastal Belt forests (MacDevette et al., 1989; van Wyk, 1990). Furthermore, these forests house numerous endemic taxa. Thus, in terms of floral biodiversity, Scarp Forest is considered the most valuable forest type in South Africa (Mucina and Rutherford, 2005). To maintain the current extent and integrity of Pondoland Scarp Forest, it is necessary to control alien plant invasion and prevent the spread of uncontrolled fires into the forest.

Pondoland – Ugu Sandstone Coastal Sourveld (1612 ha) is one of the most threatened vegetation type in UNR and as such needs to be carefully managed. Although fire is an important management tool in maintaining savannah/grassland habitats, frequent fires, as well as high levels of grazing, are not conducive to the recruitment of many of the shrubs, herbs and generic fynbos elements that are a feature of this nutrient-poor, species-rich vegetation type.

Wetlands (Subtropical Freshwater Wetlands – 30 ha) occupy only a small proportion of UNR. Wetlands perform a number of vital ecosystem services such as improving water quality (they act as sediment sinks and filter excess nutrients) and aiding atmospheric equilibrium (they store significant carbon in plant biomass).

The grassland sections of the Reserve are described as KwaZulu-Natal Coastal Belt (Mucina and Rutherford, 2006). For management and conservation purposes, EKZNW has subdivided this vegetation type into North Coast Grassland and South Coast Grassland with respect to geographical location. South Coast Grassland (0.4 ha) occurs in UNR and is a Critically Endangered vegetation type with over 90% already transformed. Present-day South Coast Grassland is intensely patchy and only small fragmented pockets remain. The main threats to this important grassland include inappropriate burning regimes, bush encroachment, alien invasive plants, heavy grazing and illegal harvesting.

Swamp Forest – *Voacanga thouarsii* (0.1ha) occupies sites with permanently waterlogged soils, and the forest has a distinct canopy and shrub layer, in this case dominated by *Voacanga thouarsii*. The most serious threat to this forest type is a change in the local hydro-geological conditions.

Conservation Targets:

- Pondoland – Ugu Sandstone Coastal Sourveld (Critically Endangered): The provincial target is 30% of the original distribution for this vegetation type, however only 17% remains untransformed. Only 33% of the remaining 17% occurs within protected areas, and UNR safeguards 25.1% of this. The conservation target has **not** been met.
- South Coast Grassland (Critically Endangered): The provincial target is 25% of the original distribution for this vegetation type, however only 6% remains untransformed. Only 22% of the remaining 6% occurs within protected areas, and UNR safeguards 0.0% of this. The conservation target has **not** been met.
- Swamp Forest – *Voacanga thouarsii* (Critically Endangered): The provincial target is 70% of the original distribution for this vegetation type, however 67% remains untransformed. Only 1% of the remaining 67% occurs within protected areas, and UNR safeguards 0.04% of this. The conservation target has **not** been met.
- Pondoland Scarp Forest (Least Threatened): The provincial target is 67% of the original distribution for this vegetation type, however 97% remains untransformed. Only 41% of the remaining 97% occurs within protected areas, and UNR safeguards 19% of this. The conservation target has **not** been met.
- Subtropical Freshwater Wetlands (Least Threatened): The provincial target is 24% of the original distribution for this vegetation type, however 80% remains untransformed. Only 56% of the remaining 80% occurs within protected areas, and UNR safeguards 0.1% of this. The conservation target has **not** been met.

Priority Species

The following Red Data listed plant species occur in the Nature Reserve:

• <i>Anthospermum streyi</i>		Rare
• <i>Asclepias patens</i>		Vulnerable
• <i>Asclepias schlechteri</i>		Endangered
• <i>Begonia dregei</i>	Dwarf wild begonia	Endangered
• <i>Begonia homonyma</i>	Large-leaved wild begonia	Endangered
• <i>Bulbophyllum scaberulum</i>		Vulnerable
• <i>Cassipourea malosana</i>		Endangered
• <i>Lydenburgia abbottii</i>		Endangered
• <i>Chironia albiflora</i>		Rare
• <i>Clivia robusta</i>		Vulnerable
• <i>Crassula obovata</i> var. <i>dregeana</i>	Stonecop	Vulnerable
• <i>Crassula sarmentosa</i> var. <i>integrifolia</i>		Rare
• <i>Craterostigma</i> sp. nov		Vulnerable
• <i>Cryptocarya myrtifolia</i>	Myrtle quince/Wild camphor	Vulnerable
• <i>Dahlgrenodendron natalense</i>		Endangered
• <i>Encephalartos natalensis</i>		Near Threatened
• <i>Erica abbottii</i>		Vulnerable
• <i>Eriosema umtamvunense</i>		Vulnerable
• <i>Eriosemopsis subanisophylla</i>		Vulnerable
• <i>Eucomis autumnalis</i>	Pineapple lily	Declining
• <i>Eugenia simii</i>		Vulnerable
• <i>Eugenia umtamvunensis</i>		Endangered
• <i>Euphorbia bupleuriodes</i>		Declining
• <i>Euphorbia woodii</i>	Wood's euphorbia	Endangered
• <i>Ficus bizanae</i>		Least Concern
• <i>Gasteria croucheri</i>		Vulnerable
• <i>Gerrardanthus tomentosus</i>		Endangered
• <i>Habenaria woodii</i>		Vulnerable
• <i>Huernia hystrix</i> var. <i>parvula</i>	Porcupine huernia	Least Concern
• <i>Leucadendron spissifolium oribinum</i>	Oribi spear-leaved cone-bush	Vulnerable
• <i>Manilkara nicholsonii</i>	South coast milkberry	Endangered
• <i>Maytenus abbottii</i>	Rock silky bark	Endangered
• <i>Maytenus oleosa</i>		Rare
• <i>Phyllica natalensis</i>		Vulnerable
• <i>Phymaspermum villosum</i>		Rare
• <i>Polystachya pubescens</i>		Vulnerable
• <i>Pronium serratum</i>		Declining
• <i>Pseudosalacia streyi</i>		Endangered
• <i>Pseudoscolopia polyantha</i>		Vulnerable
• <i>Psoralea abbottii</i>		Vulnerable
• <i>Raspalia trigyna</i>		Vulnerable
• <i>Rhynchocalyx lawsonioides</i>		Vulnerable
• <i>Merwillia natalensis</i>		Vulnerable
• <i>Syncolostemon ramulosus</i>	Round-leaved pink plume	Vulnerable
• <i>Syzygium pondoense</i>		Rare

• <i>Tephrosia bachmannii</i>		Vulnerable
• <i>Tephrosia pondoensis</i>		Endangered
• <i>Tridactyle bicaudata bicaudata</i>	Tree orchid	Least Concern
• <i>Watsonia bachmannii</i>		Vulnerable
• <i>Watsonia inclinata</i>		Vulnerable
• <i>Watsonia mtamvunae</i>		Vulnerable
• <i>Watsonia pondoensis</i>		Endangered

Action Project 3.9 (i): Update the flora types and map for UNR.

Action Project 3.9 (ii): Develop a flora monitoring programme for UNR.

Action Project 3.9 (iii): Compile and implement a flora management plan that addresses key threats to the priority flora.

Action Project 3.9 (iv): Compile a flora map and a diagnostic species list.

3.10 Fauna

Given the diversity of habitats, UNR has a similar remarkable diversity of animal species. Species checklists will be updated as data becomes available.

Action Project 3.10 (i) : Copies of the Species Checklists will be updated and filed manually and digitally at the UNR Management and Regional Offices as well as the Conservation Manager for easy reference. The copies will be updated in accordance with any authorised amendments. A fixed protocol for compiling and maintaining these checklists needs to be developed to ensure that they provide accurate, comparable and contemporary baseline data for management and scientific purposes.

3.10.1 Invertebrates

Invertebrates play critical roles in the functioning of all ecosystems as they are responsible for maintaining soil fertility, waste disposal, water purification, pest control, pollination and may even influence the structure of plant communities. In some cases the survival of locally endemic plant species may be linked to a single pollinator.

The EKZNW Biodiversity Database provides a relatively comprehensive invertebrate list. Red data listed species include: Snake-skin hunter slug (*Chlamydephorus dimidiatus*) – Vulnerable, Whitish Amakosa rocksitter (*Durbania amakosa albescens*) – Rare, the Bicoloured skipper (*Abantis bicolor*) – Rare, and the Coast purple tip (*Colotis erone*) – Restricted.

Action Project 3.10.1 (i): Compile through further research and collecting a check list of the invertebrate species found in UNR.

3.10.2 Fish

A total of 24 indigenous fish species have been recorded within UNR, of which three are listed as Rare Red Data species; Golden sleeper (*Hypseleotris cyprinoides*), Checked goby (*Redigobius dewaali*) and the Freshwater mullet (*Myxus capensis*). Two species endemic to KZN are present; Redtail barb (*Barbus gurneyi*) and the KwaZulu-Natal yellowfish (*Labeobarbus natalensis*).

Action Project 3.10.2 (i): Identify the major threats to the fish species in UNR.

Action Project 3.10.2 (ii): Develop and implement a Fish Species Monitoring Programme

3.10.3 Herpetofauna (Amphibians and Reptiles)

The presence/absence of certain frog and reptiles species is indicative of the state of health of an ecosystem. Furthermore, it is important to determine whether any rare species occur on UNR in order to determine management strategies to prevent their extinction from the Nature Reserve.

Ten species of frogs/toads are listed as occurring in the Reserve. No Red Data species are currently listed. Although not recorded in the EKZNW database, a further 28 amphibian species have been recorded in and immediately surrounding the Nature Reserve (Jewels of Mtamvuna).

Twenty-nine species of reptiles are listed as occurring in the Reserve; 9 lizards/geckos, 18 snakes and 2 terrapins. The African rock python (*Python sebae natalensis*) is listed as Vulnerable – this species inhabits a wide range of habitats, including savannah, woodland, grassland and forest, being particularly associated with areas of permanent water. It also readily adapts to disturbed habitats and may be found around human habitation.

Although not recorded in the EKZNW database, a further 3 reptile species have been recorded in and immediately surrounding the reserve (Jewels of Mtamvuna). Red Data listed species include: Black headed dwarf chameleon (*Bradypodion melanocephalum*)
Limited to the coastal areas of KZN, this species' preferred habitat includes tall grassland or riparian thicket.

Action Project 3.10.3 (i): Compile through further research and monitoring check lists of the Herpetofauna

Action Project 3.10.3 (ii): Develop and implement a Herpetofauna Species Monitoring Programme

3.10.4 Avifauna (Birds)

The EKZNW Biodiversity Database lists 260 bird species for the Nature Reserve. Of particular importance are:

Spotted ground-thrush (*Zoothera guttata*)

Endangered

This species is a local migrant, overwintering in coastal forests before returning to the scarp forests for the summer breeding season. UNR supports small numbers of primarily non-breeding birds. The degradation and alteration of the forest is the primary threat to this species.

Southern ground-hornbill (*Bucorvus leadbeateri*)

Vulnerable

Ground-hornbills require a large area (ca. 100km² per group) in which to forage and find suitable breeding trees. The NR has ensured that protection is afforded to this species by safe-guarding suitable habitat in an area where habitat alteration due to development and human pressures are high.

Swamp nightjar (*Caprimulgus natalensis*)

Vulnerable

The nightjar breeds in short coastal grassland habitat and forages over marshes, floodplains and grasslands. Records of this species occurring here are questionable.

Grey crowned crane (*Balearica regulorum*)

Vulnerable

Cranes require wetlands and the associated grasslands for breeding, it is thus important to maintain the area as short to medium-height open grasslands as suitable foraging and breeding habitat for the cranes.

Blue crane

Vulnerable

This is the world's most range-restricted crane. This species primarily occupies the grassland biome, though frequently occurs in pastures, and require shallow water or pans in which to roost. UNR is no longer considered suitable for this species.

African finfoot (*Podica senegalensis*)

Vulnerable

This species is most at risk from clearing of riverine vegetation, as well as reduced water flow in catchments. It is therefore necessary to ensure perennial flow of rivers if this species is to persist.

Martial eagle (*Polemaetus bellicosus*)

Vulnerable

The total area available for foraging is too small to support a breeding pair (require ca. 300 km²). Its persistence in this region depends on adjacent patterns of land use and transformation. The Reserve has limited open woodland preferred for nesting although forest and pylons may be used. The ability of the region to support a breeding pair will depend on future habitat loss around the Reserve.

African marsh-harrier (*Circus ranivorus*)

Vulnerable

Maintain the grassland and wetland habitats required by this species for foraging and breeding.

African grass-owl (*Tyto capensis*)

Vulnerable

Grass-owls favour tall, dense and rank patches of grassland. Nesting takes place on the ground in a tunnel of dense grass from March – April. Management protocols need to take this breeding cycle into account when planning burning regimes.

Cape vulture (*Gyps coprotheres*)

Vulnerable

Vultures have previously used the cliff sites in the Reserve for breeding, but not in recent years. It has been suggested that human disturbance is the cause of the vultures abandoning the breeding colony. This reserve has been suggested as a 'Vulture Restaurant' site due to the decreasing amount of food available to these scavengers.

Denham's bustard (*Neotis denhami*)

Vulnerable

This species favours the grassland biome, preferring high-lying open grassland and frequently occurs on plateaux. The existing grassland should be maintained in a mosaic of tall and short areas to support foraging and breeding of the species. Primary causes of species decline include habitat loss and human disturbance. Although this species is not recorded in the EKZNW database, it is suggested to breed in the Reserve.

Striped flufftail (*Sarothrura affinis*)

Vulnerable

The flufftails occur in tall, rank grasslands with associated drainage lines and prefer grassland dominated by Red grass (*Themeda triandra*) for breeding sites. Being a ground nester requiring grassland habitat, this species is vulnerable to overgrazing and too-frequent burning.

Action Project 3.10.4 (i): Determine which of the listed bird species breed in the Nature Reserve, and ensure that management protocols are set in place to maintain and conserve these breeding sites for the long – term persistence of species.

Action Project 3.10.4 (ii): Identify the major threats to Avifauna in UNR.

Action Project 3.10.4 (iii): Develop and implement an Avifauna Species Monitoring Programme.

3.10.5 Mammals

The EKZNW Biodiversity Database for UNR confirms the presence of thirteen mammal species. Red Data listed species include:

Oribi (*Ourebia ourebia*)

Endangered.

Oribi require open grassland with both short grass for grazing and long grass in which to take cover during resting and breeding. The primary threats to this species are illegal hunting and inappropriate burning regimes.

Although not recorded in the EKZNW database, a further 23 mammal species have been recorded in and immediately surrounding the reserve (Jewels of Mtamvuna). Red Data listed species include:

Blue duiker (*Philantomba monticola bicolour*)

Vulnerable

Blue duiker are specialised in their habitat requirements and are confined to forests (with a well developed understorey), thickets or dense coastal bush, and are most at risk from poaching or illegal hunting.

Sykes' monkey (*Cercopithecus albogularis labiatus*)

Vulnerable

Closely confined to forest habitat, these monkeys feed primarily on fruit, flowers and leaves of a range of tree species. The primary threat to this species is the destruction of their tree food species.

Action Project 3.10.5 (i): Identify the major threats to Mammals in UNR.

Action Project 3.10.5 (ii): Develop and implement a Mammals Species Monitoring Programme

3.11 Cultural Heritage

UNR's cultural resources include:

- The remains of the Old Port which used to be a rest site for travellers. The Old Port was further significant in the trade of ivory.
- The presence of two bichrome rock shelters.
- Two sites with iron tools
- Two sites with pottery/ bone (in situ)

Bona Fida researchers are allowed to view sites with the provision of obtaining permits from Ezemvelo KZN Wildlife and AMAFA.

Action Project 3.11 (i): Map the GPS Co-ordinates and provide Management Plans for these sites.

Action Project 3.11 (ii): Identify the archaeological, historical, palaeontological and cultural heritage sites at UNR. Ensure compliance with the requirements of heritage legislation.

3.12 Socio-Cultural History of the Area

The Umtumvuna Forest Reserve 3664 morgen was demarcated in 1939. T.K. Pringle was the original owner of adjacent, including the farm that was sold as a township, now Port Edward. Pringle's estate was surveyed into subdivisions in 1948. J.T. Muller bought the Eastview and Cragadour farms in 1953. The subdivisions sold from that date on have been to numerous individuals. The Forest Reserve was administered from Weza and the original game guard camp housed two forest guards who patrolled the Gorge on horseback.

The Umtumvuna Forest Reserve was not fenced and the adjacent farms were fenced into camps. The fences crossing the Reserve ran to the Gorge edge, and the surrounding farmers profited from the grazing along the top of the Gorge. The original owners were mainly farmers from inland (Kokstad and Matatiele districts), who used this area for winter grazing.

The Pondoland side of the Umtumvuna Forest Reserve was traditionally the winter grazing area. Consequently it was only sparsely inhabited by herders during the winter months. In the last 30 years that the area has become inhabited and there is now poaching and wood-cutting occurring.

Action Project 3.12 (i): Conduct research on the archaeology of the UNR.

Action Project 3.12 (ii): Make use of archaeology and evidence of the past cultures that inhabited the area in describing the cultural heritage value of UNR.

3.13 Sociological Context

The reserve is bordered by commercial agriculture (sugar cane and banana farms) and rural communities.

Action Project 3.13 (i): Update the Sociological context and its importance to UNR.

3.14 Economic Context

The Nature Reserve contributes to the economy in the following ways:

Recreational activities that are offered by UNR include:

- Self guided trails;
- Canoeing;
- Bird Watching; and
- Picnicking

Facilities and services that are offered by UNR include:

- A Herbarium;
- The Interpretive Centre which offers a venue for educational activities;
- Braai Facilities;
- Employment opportunities to the local community for the eradication of alien plants and fire management; and
- The levy which is used for the upliftment and development of the local community.

Ecosystem services that are provided by UNR include:

- Potable drinking water to the surrounding communities
- Recreational experiences (ecotourism)
- Meeting people's sense of cultural, spiritual and intellectual needs
- Nutrient cycling
- Water filtration
- Regulation of ground water and river channel flow
- Climate regulation
- Seed dispersal
- Maintenance of soil health
- Prevention of soil erosion
- Carbon sequestration

Action Project 3.14 (i): Update the economic context and its importance for UNR.

3.15 Developed Infrastructure

It is imperative that the necessary appropriate standard of infrastructure be developed and maintained as soon as possible to support the effective management of UNR and promote eco-cultural tourism to the reserve. Concept future development will be detailed in the UNR Concept Development Plan (See **Action Project 6.11.3 (ii)**).

Action Project 3.15 (i): Identify and map infrastructure using GIS and include in a spatial database. Develop standard protocols and procedures for infrastructure in UNR.

Action Project 3.15 (ii): Repair, where necessary, the standard and state of the existing infrastructure provided in the UNR.

3.15.1 Eco-cultural Tourism Infrastructure

Eco-cultural tourism infrastructure in the Park consists of:

- No overnight facilities (accommodation)
- Education centre and herbarium
- Viewing deck
- 3 sheltered picnic sites with signposted ablution facilities in the environmental centre

Action Project 3.15.1 (i): Investigate future opportunities for eco – cultural tourism infrastructure for UNR.

3.15.2 Management Infrastructure

Management infrastructure consists of:

- Main office with ablution (Part of the education centre and herbarium)
- One conservation managers house with ablution facilities
- Tweedy huts (staff accommodation) with ablution facilities
- Two ranger outposts: (3 bedrooms, communal kitchen and ablution facilities)
 - One at Gogoza (north west boundary)
 - Pont (south east boundary)

3.15.3 Bulk Infrastructure:

Bulk infrastructure consists of:

- 9 kilometres of management tracks and a concrete strip of 500 metres for public use
- One management waste site (solid waste is collected and transported to the Port Edward Skip)
- There are 5 septic tanks with french drains at UNR
- Water is pumped from the borehole to water tanks where it is purified and distributed via gravity.
- Electricity is provided by Eskom except at the Pont outpost where solar power is used
- A Telkom line is available at UNR
- One helipad

3.15.4 Conservation Infrastructure

Other conservation infrastructure outside the developed centres consists of:

- 32 km of self guided hiking trails.
- Trig beacon at Western Heights
- There is 200 metres of internal fencing around management infrastructure.
- The perimeter boundary fences total length is approximately 17 km. The existing boundary fence is generally 1.5 m high with 3 wire strands above. The fence is not standardised.

Action Project 3.15.4 (i): Develop a standardised fence for the boundary and put it in place.

Action Project 3.15.4 (ii): Develop a maintenance plan for all trails and fences.

3.15.5 Water Supply Infrastructure

Water is pumped from the borehole to water tanks where it is purified and distributed via gravity.

All water supply infrastructure must be appropriately screened to reduce its potentially detrimental aesthetic impact. For management purposes it is essential that all water supply infrastructure be indicated on the reserve map.

Action Project 3.15.5 (i): Update UNR Map to include the location of all water supply infrastructure.

3.15.6 Infrastructure Maintained by other Organisations

Electricity and a telephone line are provided by Eskom and Telkom respectively.

Action Project 3.15.6 (i): Compile MoA between different service providers and UNR. Manager needs to ensure that he is familiar with all agreements.

4 MISSION STATEMENT, MANAGEMENT OBJECTIVES AND CONSERVATION TARGETS

4.1 Introduction

Ezemvelo KwaZulu-Natal Wildlife has a legislative mandate which rests the custodianship of biodiversity conservation within the organisation. In alignment with this mandate, EKZNW has adopted a Five Year Strategic Plan and Performance Plan for 2009-2014 which has identified the following corporate Vision, Mission, Goals and Core Values.

EKZN WILDLIFE STRATEGIC VISION, MISSION, GOALS AND CORE VALUES	
VISION	
<i>“To be a world renowned leader in the field of biodiversity conservation”</i>	
MISSION STATEMENT	
<i>“To ensure effective conservation and sustainable use of KwaZulu Natal’s biodiversity in collaboration with stakeholders for the benefit of present and future generations.”</i>	
STRATEGIC GOALS	
<ol style="list-style-type: none">1. To conserve indigenous biodiversity in KwaZulu-Natal both within and outside of protected areas.2. To be a sustainable, well resourced and capacitated biodiversity conservation and ecotourism organisation.3. To foster the value of biodiversity conservation with stakeholders.4. To be an efficient, effective and compliant organisation with good governance.5. To effectively promote the mandate of the organisation to stakeholders.	
CORE VALUES	
Integrity	– at all times we act morally, ethically and with honesty.
Respect	– we treat stakeholders with patience, politeness and acknowledge and value their right and those of the environment.
Accountability	– we involve stakeholders in the organisation’s activities with a culture of openness and are answerable for the outcome of our actions and activities.
Team Work	– working together to achieve our vision through goals.
Innovation	– an adaptable organisation that embraces the culture of creativity and learning.
Excellence	– we are a progressive organisation applying best practices to achieve the highest quality and standards.
Commitment	– at all times we undertake our activities with passion, loyalty and dedication.
Productivity	– we undertake to produce results timeously, efficiently and effectively.

Cognisant of EKZNW’s legislative mandate as well its corporate Vision, Mission, Goals and Core Values, this UNR Integrated Management Plan (IMP) has been developed in consultation with stakeholders.

4.2 Stakeholder Participation

The public participation process followed in developing this IMP included public meetings with stakeholders and management staff, resulting in the development of the draft IMP. The draft IMP was then reformatted into a standardized EKZNW IMP format and advertised and distributed for further public comment. The document was then finalized while undertaking further consultation.

The details of the public participation process for this IMP's development is contained in the Public Participation Report (see **Appendix 1, Item 7**).

Action Project 4.2 (i): Implement EKZNW IEM Policy. Create awareness of or inform surrounding landowners on the IEM Process and legislation through fora.

Action Project 4.2 (ii): Participate as a key stakeholder in EIA applications for developments near the reserve that may impact on the protected area.

Action Project 4.2 (iii): Participate in existing neighbour liaison fora.

4.3 Vision

The vision of the Umtamvuna Nature Reserve is:

“A consolidated, managed and legally protected Nature Reserve, providing sustainable and tangible benefits to visitors, neighbours and the metropolitan area through the provision of appropriate access to the cultural and natural resources”.

4.4 Mission

The mission of the Umtamvuna Nature Reserve is:

“To sustainably manage and conserve the natural and cultural resources of the Umtamvuna Nature Reserve, based on sound environmental principles, for the equitable benefit of both visitors and other stakeholders.”

The Nature Reserve Objectives were aligned with the following overarching management Objectives for UNR. These objectives are not ranked in order.

- **Conservation** of key biodiversity features, biophysical processes, landscapes, abiotic, historical and archaeological resources
- The provision of **socio-economic benefits** (benefit flow) to the Reserve's neighbours and to contribute to the local economy and the efforts of conservation in a sustainable manner based on sound business principles (EKZN Business Plan)
- The provision of appropriate ecotourism **business** opportunities in the natural and cultural environment based within the influence sphere of UNR.
- The formation of functional **partnerships** to integrate the UNR with regional development plans and other initiatives which underwrite the vision of UNR.

4.5 Management Objectives

Management Objectives for UNR were set not according to ranking:

- Conserve rare and endemic ecosystems and species
- Conserve the Umtamvuna Nature Reserve, its associated biodiversity and maintain its developed infrastructure
- Contribute to sub-regional eco-tourism initiatives
- Contribute to the achievement of national and provincial conservation targets
- Facilitate controlled access to cultural heritage sites
- Facilitate environmental and cultural activities, education and awareness, including access to historical information related to the history of the reserve and the surrounding area
- Identify and control threats to biodiversity
- Minimise threats to the sense of place (retain the aesthetic value of the area)
- Participate as a key stakeholder in local environmental management initiatives
- Play a key role in local eco-tourism initiatives
- Play a notable role in local, regional, national and international conservation initiatives
- Promote and encourage community involvement in biodiversity conservation
- Promote and ensure effective communication between the local communities and EKZNW through integrated, shared and co-operative working relationships
- Promote conservation as a viable and sustainable land use option
- Promote supervised access to the reserve and its resources, both natural and cultural, and promote responsible use of the facilities by the public
- Provide appropriate recreational opportunities
- Safeguard the archaeological, historical, palaeontological and living cultural heritage of the Reserve

4.6 Conservation Targets

In order to assist in developing a conservation management strategy more effectively linked to budget and resources, it is necessary to have specific conservation objectives (or 'targets' in conservation planning terms) in place. Monitoring of status relative to these targets will then allow for measurement of success of management interventions (and consequent budget and resource adjustments where required), and to trigger management interventions when certain thresholds are reached. This removes the 'monitoring to extinction' problem that has arisen in many organisations.

Apart from the need to monitor the success of implementation of the strategy in terms of achievement of conservation targets, a basic requirement for a systematic approach to conservation planning, impact assessment and protected area management effectiveness assessment is the identification of a clear set of provincial goals for the province, which for operational use needs to be translated into a more specific set of quantitative 'targets' (Margules & Pressey 2000). A key (but faulty) assumption often made with provincial Systematic Conservation Plans in terms of conservation priorities outside the protected area network is that protected areas continue to conserve key species and habitats at the same levels at which they occurred when the plan was developed. Where protected areas have failed to do so, it will result in an underestimate of conservation requirements outside protected areas and hence the real possibility of provincial conservation objectives and targets not being achieved. It is therefore essential to design and implement management and monitoring strategies to ensure that UNR continues to conserve those species and habitats which are important at a provincial level.

Conservation targets for biodiversity are not easily set, and indeed, conservation managers, scientists, decision makers and politicians have been reluctant to formalise and agree to targets. In reality our understanding of 'how much is enough', in what spatial configuration this should be, what the most critical processes are for the maintenance of biodiversity and how one can conserve these is poor, and the debate and research around this topic will continue for some time to come. This information will be continuously updated over time as our knowledge of area, connectivity and other process requirements improves for the conservation of ecosystems, communities and species. However, management has to take place despite these deficiencies so it is necessary to make best use of available information, stating the assumptions and limitations, and to see conservation targets

as a set of working hypotheses around which conservation planning and evaluation can take place. Another advantage of developing strategies around targets is that this process serves to highlight the critical knowledge deficits thus guiding future research and monitoring priorities.

4.7 Conservation Targets for the Reserve

Specific conservation targets for the UNR are required to develop a strategy linked to budget and resources, to allow for monitoring and evaluation, as well as policy improvement.

Conservation targets for the UNR are presented in Tables 1:

Table 1: Biodiversity Targets

Element of Concern	Key Attribute (Threats)	Indicator	Current Status	Target
Conserve the endangered and critically endangered Veld types in UNR.				
The Pondoland-Ug Sandstone Coastal Sourveld is critically endangered.	<ul style="list-style-type: none"> The provincial target is 30%, however only 17.1% is untransformed. Only 32.5% of this vegetation type remains within protected areas. Decline of veldtype. 	<ul style="list-style-type: none"> Land transformation. Alien species invasion. Poor veld management. Arson Fires. No recruitment. Illegal harvesting of plants. 	<ul style="list-style-type: none"> UNR contributes 25.1% to the provincial remains. 	TBD
Southcoast Grassland Veld is critically endangered.	<ul style="list-style-type: none"> The provincial target is 25%, however only 6.2% is untransformed. Only 22.0% of this vegetation type remains within protected areas. Decline .of veld type 	<ul style="list-style-type: none"> Land transformation. Alien species invasion. Poor veld management. Arson Fires. No recruitment. 	<ul style="list-style-type: none"> UNR contributes 0.0% to the provincial remains. 	TBD
Swamp Forest – <i>Voacanga thouarsii</i> is critically endangered.	<ul style="list-style-type: none"> The provincial target is 70%, however only 67.3% is untransformed. Only 0.7% of this vegetation type remains within protected areas. Decline of veldtype. 	<ul style="list-style-type: none"> Land transformation Alien species invasion. Poor veld management. Arson Fires. No recruitment. 	<ul style="list-style-type: none"> UNR contributes 0.04% to the provincial remains. 	TBD
To conserve critically endangered, endangered and rare Red Data plant species.				
<i>Raspalia trigyna</i> is critically endangered.	<ul style="list-style-type: none"> There is a loss of plant species. 	<ul style="list-style-type: none"> Land transformation. Alien species invasion. No recruitment. 	<ul style="list-style-type: none"> UNR needs to conserve this species in good condition 	TBD
<i>Euphorbia woodii</i> is endangered.	<ul style="list-style-type: none"> There is a loss of plant species. 	<ul style="list-style-type: none"> Land transformation. Alien species 	<ul style="list-style-type: none"> UNR needs to conserve this species in good 	TBD

Element of Concern	Key Attribute (Threats)	Indicator	Current Status	Target
		invasion. • No recruitment.	condition	
<i>Gerrardanthus tomentosus</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Maytenus abbottii</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Pseudosalacia streyi</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Tephrosia pondoensis</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Asclepias scheltheri</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Begonia dregei</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Begonia homonyma</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Cassipourea malosana</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Lydenburgia abbottii</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Dahlgrenodendron natalense</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species	• UNR needs to conserve this species in good	TBD

Element of Concern	Key Attribute (Threats)	Indicator	Current Status	Target
		invasion. • No recruitment.	condition	
<i>Eugenia umtamvune</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Manilkara nicholsonii</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Watsonia pondoensis</i> is endangered.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Anthospermum streyi</i> is rare.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Chironia albiflora</i> is rare.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Maytenus oleosa</i> is rare.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Crassula sarmentosa</i> <i>Var. Imtegrifolia</i> is rare.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Phymaspermum villosum</i> is rare.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
<i>Syzygium pondoense</i> is rare.	• There is a loss of plant species.	• Land transformation. • Alien species invasion. • No recruitment.	• UNR needs to conserve this species in good condition	TBD
To conserve rare ecosystems and species.				
• <i>Durbania amakosa albescens</i> is rare. • Invertebrate	• There is a loss of individuals.	• Decrease in condition.	• UNR needs to conserve this species in good condition	TBD
• <i>Abantis bicolor</i> is rare. • Invertebrate	• There is a loss of individuals.	• Decrease in condition.	• UNR needs to conserve this species in good	TBD

Element of Concern	Key Attribute (Threats)	Indicator	Current Status	Target
			condition	
<ul style="list-style-type: none"> <i>Hypseleotris cyprianoides</i> is rare. Fish 	<ul style="list-style-type: none"> There is a loss of individuals. 	<ul style="list-style-type: none"> Decrease in condition. 	<ul style="list-style-type: none"> UNR needs to conserve this species in good condition 	TBD
<ul style="list-style-type: none"> <i>Redigobius dewaali</i> is rare. Fish 	<ul style="list-style-type: none"> There is a loss of individuals. 	<ul style="list-style-type: none"> Decrease in condition. 	<ul style="list-style-type: none"> UNR needs to conserve this species in good condition 	TBD
<ul style="list-style-type: none"> <i>Myxus capensis</i> is rare. Fish 	<ul style="list-style-type: none"> There is a loss of individuals. 	<ul style="list-style-type: none"> Decrease in condition. 	<ul style="list-style-type: none"> UNR needs to conserve this species in good condition 	TBD
<ul style="list-style-type: none"> <i>Zoothera guttata</i> is endangered. Bird. 	<ul style="list-style-type: none"> There is a loss of individuals. 	<ul style="list-style-type: none"> Loss of suitable habitat. 	<ul style="list-style-type: none"> UNR needs to conserve this species in good condition 	TBD
<ul style="list-style-type: none"> <i>Ourebia ourebia</i> is rare. Mammal. 	<ul style="list-style-type: none"> There is a loss of individuals. 	<ul style="list-style-type: none"> Decrease in condition. 	<ul style="list-style-type: none"> UNR needs to conserve this species in good condition 	TBD

Action Project 4.6 (i): Set conservation targets and monitoring strategies for the identified species.

Action Project 4.6 (ii): Develop conservation targets and monitoring strategies for Cultural, Business and Partnerships.

5 ZONATION

The Recreational Opportunity Spectrum (ROS) has been used for zoning of the Park. This system was developed by the United States Forest Service and used to zone protected areas in KZN by EKZNW.

The ROS system enables the protected area to be zoned, in context, according to seven categories. These categories are spread along a continuum, from Wilderness to rural recreational development namely: Pristine Wilderness, Primitive Wilderness, Semi-Primitive Wilderness, Semi-primitive Non-Motorised, Semi-Primitive Motorised, Roaded Natural and Rural.

Each category within the ROS is defined in terms of activity, setting and experience opportunities. The ROS zonation system recognises and reflects:

- the sensitive features associated with the protected area (*i.e.* biophysical, cultural and sense of place)
- the range of existing and potential visitor experiences in and surrounding the protected area
- the influence of existing development and use on these features and experiences
- the opportunities and constraints (biophysical, social or managerial constraints) for use
- the existing / potential threats to the protected area either within or adjacent to the protected area
- the opportunities for extending the protected area and linking with surrounding reserves, conservancies and open spaces

As a result, the final management zonation is a composite of ecological zonation (based on natural and cultural 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 ecotourism objectives for the reserve.

A zonation table (Table 2) detailing the boundaries and rationale for each zone, as well as the zone's natural and cultural features supports the zonation map. Biophysical features that are readily located on the ground have been used to demarcate and delineate the zone boundaries. The zones are indicated spatially on Zonation Map 3. The zones are recognised in UNR, these are given in Table 2.

(Source: ROS User Guide, United States Forest Service, as in the Advanced Wilderness Course Manual)

Action Project 5 (i): Revise the existing UNR zonation plan in accordance with the new EKZNW standard zonation system as soon as it is developed and approved.

6 OPERATIONAL MANAGEMENT POLICY FRAMEWORK AND GUIDING PRINCIPLES

The following predominant existing or potential threats to the Nature Reserve have been identified:

- Inadequate financial and human resources.
- Illegal activities in and around the Nature Reserve such as poaching, illegal gathering of medicinal plants and arson fires.
- Catchment degradation disrupting natural ecological processes resulting in a decline of the water quality in rivers in terms of depth and water flow.
- Inappropriate or ineffective conservation management (especially fire management)
- Alien species invasion.
- Soil erosion.

The UNR operational policy framework, guidelines and strategies have been developed to support the achievement of the stated Nature Reserve management objectives and where possible to address the existing or potential threats as listed above.

6.1 Financial and Human Resources

6.1.1 Financial Resources

Capital and operational funding for UNR is sourced primarily from the KwaZulu-Natal Provincial Government. Funding is furthermore generated from commercial operations within the Park and various external sources.

Levels of funding have remained stable, however, over time the management of the Nature Reserve cannot be sustained at required levels and capital assets, including infrastructure, are not being effectively maintained.

It is necessary therefore to develop a realistic five-year Strategic Management and Business Plans in an attempt to secure funding to effectively support the achievement of the mission and management objectives for the Nature Reserve.

The development of a UNR Business Plan is a priority and must indicate past income and expenditure trends, a five year projection of income and expenditure targets that will allow for effectively achieving the UNR management objectives. In addition, planning must be put in place to address any budget shortfalls after the annual grants from the KwaZulu-Natal Provincial Government have been accounted for.

The total self-sufficiency of commercial operations within the Nature Reserve is a minimum requirement, while it will be expected that commercial operations must respect the natural and cultural heritage values of UNR and that any operational profit will be used to subsidise the Nature Reserve's conservation and community programmes.

The value of ecosystem services that UNR provides as well as the direct and indirect economic value of the Nature Reserve to the local and regional economy must be determined in order to market the Nature Reserve, ensure continued government funding and where appropriate, leverage additional funding from other sources.

Action Project 6.1.1 (i): Develop a five-year Strategic Management Plan and Business Plan for UNR.

Action Project 6.1.1 (ii): Initiate a resource economics study of the Nature Reserve to determine its economic value regarding the provision of ecosystem services and its contribution to the local and regional economy.

6.1.2 Human Resource Capacity

The existing human resource structure and capacity is insufficient to fully meet UNR Management Objectives. The following objectives in particular are emphasised:

- Safe and secure environment for staff and visitors.
- Cultural heritage management.
- Efficient and profitable tourism management
- Effective conservation and sustainable use of the biodiversity and landscape.
- Stakeholder liaison.
- Environmental education and awareness programmes.

In order to effectively address the full spectrum of UNR management functions it is imperative that the human resource needs are fully investigated with a view to developing a new and effective human resource structure for UNR.

To improve accountability, efficiency, co-ordination and reporting significantly, an option would be to consider a staff structure situated under a single Nature Reserve Manager. This investigation needs to be undertaken urgently in order to inform the UNR Business Plan.

Action Project 6.1.2 (i): Investigate and develop an appropriate human resource structure and capacity of UNR with a view to improving effectiveness and efficiency in achieving UNR objectives and informing the Business Plan.

6.1.2.1 UNR Employment Policy Guidelines

UNR Management Committee will always be informed in advance of impending recruitment of staff.

- Appointments will be made in accordance with the:
 - relevant employment legislation;
 - employment policy framework of EKZNW;
 - required experience, skills, proven ability and qualifications of applicants.
- Entry-level or temporary appointments requiring no specific skills will be employed from neighbouring communities after consultation with the UNR Management Committee.

6.2 Local Community Involvement

EKZNW will strive to work collaboratively with institutions and adjacent landowners / communities to improve communication as well as conservation management in and around the Nature Reserve for the benefit of all. Neighbour relations and partnerships are guided by EKZNW Board Policies No. 4.8 and 4.11.

EKZNW encourages community involvement in the management of the Nature Reserve through collaboration with adjoining communities in the following programmes and projects.

Action Project 6.2 (i): EKZNW will continue to work collaboratively with landowners and surrounding communities to improve conservation management of UNR for the benefit of all.

6.2.1 Local Board

Community participation in the Nature Reserve is realised, mainly, through a Local Board which is established in terms of Chapter 5 of the KZNNCMA. The EKZNW Board Policy No.4.9 (**Appendix 2**) provides an operational relationship framework between the Nature Reserve and its Local Board to ensure effective community participation in the management of the Nature Reserve. This Local Board must still be established.

Action Project 6.2.1 (i): Establish a Local Board for UNR.

6.2.2 Community Levy Trust Fund

Communities adjacent to the UNR benefit from income generated by the Nature Reserve through a community levy paid by visitors. These funds are administered through the Community Trust Fund and provided to communities for development needs as prescribed by EKZNW Board Policies No. 4.16 and No. 4.6 (**Appendix 2**).

Action Project 6.2.2 (i): The Community Levy will continue to be collected for the development and upliftment of the local communities.

6.2.3 External Funding Projects

UNR procures external funding for specific Nature Reserve related projects; priority is given to training members of the community and the creation of community small, micro and medium enterprise (SMME) business and employment opportunities.

Action Project 6.2.3 (i): Training of members of the local community will continue to be practiced. Investigate other employment opportunities that will benefit the surrounding local communities of UNR.

6.2.4 Land Claims

There are no known land claims against UNR.

6.2.5 Environmental Education

It is EKZNW policy to provide environmental education programmes for communities adjoining UNR. These programmes will be conducted in accordance with **Board Policy No. D 2.34**. Access to the material and spiritual benefits of the Nature Reserve is facilitated in accordance with Neighbour Relations **Board Policy D 4.1** (See **Appendix 2**). Environmental education programmes are addressed further under **Par. 6.8**.

Action Project 6.2.5 (i): Investigate and implement additional environmental education programmes for communities surrounding UNR.

6.2.6 Transfrontier Partnerships

Transfrontier linkages between UNR management and Eastern Cape Province communities / authorities are necessary to build positive collaborative relationships that would be mutually beneficial and promote the KWANECC concept. UNR has a provincial transfrontier partnership however, it is non functional.

Action Project 6.2.6 (i): Establish effective provincial Transfrontier collaborative structures for the UNR with the Eastern Cape.

6.2.7 Informal Participation

Local community involvement will not only occur through formal structures like the UNR Local Board but also through an annual public meeting where informal community participation will be encouraged.

Action Project 6.2.7 (i): Annually in March of each year arrange a public meeting to give feedback on progress, planned projects and encourage informal local community participation.

Informal communication between the general public / stakeholders and reserve management will be encouraged at all times within practical limits (Open door policy).

6.3 Security and Safety

EKZNW recognises that illegal activities within and around UNR can be a severe threat to the integrity of its natural and cultural heritage, its water storage and supply infrastructure, as well as the safety of UNR users, neighbouring communities and the attainment of its stated Mission and Management Objectives.

Nature Reserve management must therefore initiate and institutionalise a security strategy that ensures co-ordinated participation in all possible local, regional or KWANECC security forums and networks while optimising security in and around UNR. This strategy must ensure sufficient capacity to deal with conservation-related illegal activities in UNR (See also **Par. 6.4.7**) and contribute to a network of provincial, national and international law enforcement intelligence.

Action Project 6.3 (i): Develop an integrated security strategy for the Nature Reserve that ensures collaboration with all relevant institutions.

Action Project 6.3 (ii): Develop and implement a Civil Emergency Procedures Plan.

6.4 Natural Resource Management

6.4.1 Introduction

The management philosophy is one of adaptive management. This includes implementing management actions according to the stated objectives, policies and operational plans, monitoring progress and adapting the management strategy accordingly. This is done using a participatory, team approach and making use of the best scientific understanding in collaboration with partners and stakeholders. The principle of sustainable use of natural resources is implicit in the philosophy.

Management aims to conserve biodiversity through addressing threats and ensuring the maintenance and/or re-instatement of ecological processes that are considered the main determinants of ecosystem structure and function. Where these processes or regulatory mechanisms have been disrupted and cannot be re-instated, management should attempt to simulate their effects; Management intervention in the system should be minimised. In particular, the function of sustained water delivery of quality water is paramount.

Fire is a key ecological process influencing biodiversity in UNR. Given the above, the objective is to actively manage for a shifting mosaic of vegetation patches with high basal cover but different ages and sizes - thereby creating a diversity of habitats that should ensure the conservation of the biodiversity representative of the area. This approach will also provide the best insurance policy for the majority of organisms for which habitat requirements and response to fire are unknown. The mosaic is achieved is through controlling the spread of fire in the landscape and the conditions under which fires are ignited.

The other key interventions required to conserve biodiversity are the control of invasive species and man-induced soil erosion, as well as wildlife management and minimising illegal activities (e.g. illegal hunting and plant collecting).

6.4.2 Fire Management

Nature Reserve Management shall convene and chair a **Fire Workshop** in February each year. This workshop shall include Conservation Partnerships and Ecological Advice staff, and invited experts where appropriate.

At this Fire Workshop the burns of the previous fire season (planned and unplanned) will be reviewed and, based on the Nature Reserve **Fire Management Plan**, management units will be scheduled for burns in the upcoming fire season and recorded as the **Annual Burning Plan** for implementation. In preparation for the Fire Workshop all fire returns must be with Ecological Advice by 30 November each year to allow for digital capture and analysis of the data.

The **Fire Management Plan** is to be based on the UNR management objectives and guided by 'best practice' linked to scientific understanding, legal context and risk management.

Action Project 6.4.2 (i): Develop a UNR **Fire Management Plan** that provides comprehensive fire management objectives, scientific understanding, management actions, legal compliance, personnel training requirements, monitoring and research required and resources needed.

Action Project 6.4.2 (ii): Develop a computerized decision support tool linked to GIS that will be included in the Fire Management Plan, to assist in the planning of burns at the annual Fire Workshop. This rule-based tool must ensure that UNR - wide and area-specific fire management objectives can be simultaneously achieved wherever possible, and must allow for flexibility in response to unplanned fires.

UNR is obligated in terms of the National Veld and Forest Fire Act to be a member of the local Fire Protection Association (FPA). In this regard Park Management will actively champion the establishment and maintenance of FPA's on and bordering UNR in order to gain the full legal advantages of being a member of the FPA and to promote, where possible, fire management regimes surrounding UNR that would benefit the conservation of biodiversity and ecological processes.

Action Project 6.4.2 (iii): Promote and champion (in cooperation with DWAF and the "Working on Fire" programme) the establishment of FPAs on the borders of UNR.

Action Project 6.4.2 (iv): Arrange a UNR Fire Management Workshop in February of each year.

6.4.3 Alien Species Control and Management

The requirements of NEMBA (Sections 76 and 77) in terms of **invasive species** and the relevant legal obligations of protected area management authorities must be noted. The following is the UNR strategy to deal with alien and alien invasive species in the Nature Reserve.

Action Project 6.4.3 (i): Compile and implement an alien species management plan. Identify and itemize indicator species and their current species densities in UNR.

6.4.3.1 Alien Plants

Alien plant species have been planted or have established themselves within UNR over time. Because they can, to varying degrees, impact negatively on water production, the natural environment and biodiversity as well as the natural landscape character of the Nature Reserve. Their control and management is considered a management priority.

Wherever possible and appropriate these plants must be removed from UNR.
The following management guidelines apply:

Alien Plant Introductions

Introductions of alien plants to UNR will not be tolerated except for non-invasive vegetables, garden plants, fruit trees, or herbs (for domestic consumption) planted within staff accommodation plots or non-invasive pot plants used indoors for decorative purposes, provided these plants in no way impact negatively on the ecological processes or disrupt normal animal behaviour patterns (e.g. fruit trees and baboons / monkeys).

Only plants indigenous to the UNR and surrounds will be used outdoors in landscaping projects within the demarcated development zones.

Declared Alien Weeds and Invasive Plants

Alien plants declared **weeds and invader plants** under section 29 of CARA (Act No. 43 1983) are a serious threat to the ecological functioning of natural systems as well as groundwater storage and water production from catchments. They must be controlled in terms of the relevant

CARA regulations. An ongoing time-bound programme to effectively control these alien weeds and invader plants within the UNR and up to 1km beyond (buffer area) the Nature Reserve boundary must be developed in collaboration with neighbours and the relevant municipalities.

State poverty relief programs such as 'Landcare', 'Working for Water', "Working on Fire" and "Working for Wetlands" should be used to full effect to complement the Nature Reserve budget for this management task.

UNR management will be accountable for all invasive alien plant clearing and therefore must strictly supervise control operations to ensure that the correct methodologies are used and to avoid environmental damage.

Alien species are regarded as species or genotypes that are not indigenous to the Reserve, including hybrids and genetically altered organisms. Alien plants which have been declared weeds and invader plants (according to Section 29 of CARA) are a serious threat to the ecological functioning of natural systems.

The alien plant species of relevance within and immediately surrounding the Nature Reserve are the following:

- | | |
|------------------------------|--------------------|
| • <i>Acacia mearnsii</i> | Black wattle |
| • <i>Acacia longifolia</i> | Long-leaved wattle |
| • <i>Chromolaena odorata</i> | Triffid weed |
| • <i>Lantana camara</i> | Lantana |

Project 6.4.3.1 (i): Undertake a full survey for alien plant species present and map this.

Project 6.4.3.1 (ii): Develop an ongoing time-bound programme to effectively control declared alien weeds and invader plants within UNR and 1 km beyond (buffer area) the Nature Reserve boundary.

Existing Non-invasive Alien Plants

A phased 3-year plan to address the existence and spread of **non-invasive alien plants** (including grasses) that already exist within UNR must be developed. Where required, this plan must also address the re-planting of relevant areas with indigenous plants. If considered appropriate by the PAMC, certain non-invasive alien plants may be demarcated and retained for horticultural or cultural-historical purposes. They must, however, not be replaced should they die, unless recommended by the PAMC for cultural-historical reasons. All seedlings of demarcated alien plants must be removed annually.

Project 6.4.3.1 (iii): Develop a phased 3-year plan to address the existing non-invasive alien plants in UNR.

6.4.3.2 Alien Animals

Alien animal species can threaten the ecological, genetic or natural aesthetic integrity of the Nature Reserve and can be vectors for the spread of diseases. Their control and management are considered a management priority. Wherever possible and appropriate these animals must be removed from the UNR.

The following management guidelines apply:

Alien Animals Present in UNR

Alien animals that are present and are a threat / potential threat to the ecological processes / tourism experience in the Nature Reserve will be dealt with as necessary according to a control programme developed and approved by the PAMC.

There are no grazing concessions that have been made regarding alien animals in UNR. Sometimes security fences are cut allowing goats and cattle to enter UNR. Cutting of these fences is an illegal activity and culprits will be found and prosecuted.

A management strategy is needed to monitor and eliminate of alien fish species in UNR.

Mallard ducks, alien wild ungulates, 'domesticated' guinea fowl and feral species are all potential threats and could be found in the Nature Reserve sporadically. They must be destroyed as soon as possible after their presence is detected (humanely as practically possible and with due regard for the tourist experience).

Action Project 6.4.3.2 (i): Develop a control programme for alien animals present in UNR.

Action Project 6.4.3.2 (ii): Develop a management strategy that will minimise the negative impact of alien fish and promote the establishment of sustainable populations of fish species indigenous to the UNR.

Alien Animal Introductions

Introductions of alien animals to UNR is not accepted except:

- as part of culture-based, community-based or management projects approved by the PAMC; or
- for domestic animals and livestock (incl. donkeys and horses) kept for official purposes or privately by staff according to specific rules for each management centre / protected area; and
- in accordance with relevant EKZNW policies.

It is critically important that these exceptions do not negatively influence the integrity and sustainability of Nature Reserve's biodiversity and ecological processes.

- A new, standardised and equitable UNR policy for keeping domestic animals and livestock is required and must also include procedures to deal in a consistent manner with alien animals that stray into UNR.

Action Project 6.4.3.2 (iii): Develop a new, equitable policy for keeping personal and official domestic animals and livestock in the Nature Reserve that includes procedures for dealing in a consistent manner with alien animals that stray into the Park. This policy must, *inter alia* clearly address:

- Threats to biodiversity conservation as a priority.
- Reducing the numbers of such animals to an absolute minimum.
- Designating areas where these animals must be kept. They must not be allowed to roam or feed in the Park (except for official patrol horses when on patrol) or interfere in any way with tourists.
- The proper and hygienic care of these animals.
- Minimum standards (aesthetic acceptability, sizes, neatness and cleanliness) of facilities housing these animals e.g. stables, camps, cages etc.
- Disciplinary measures for staff transgressing these regulations or failing to enforce these measures.

6.4.4 Catchment Management

In order to ensure a sustained flow of good quality water from this natural catchment it is essential that throughout the catchment (both in and outside UNR) :

- A good vegetative canopy and basal cover is maintained to maintain a sustained flow of water and reduce turbidity caused by accelerated soil loss;

- Strict pollution control and waste management standards must be applied especially in the Nature Reserve;
- Natural wetlands in the catchment are maintained and any damaged wetlands rehabilitated;
- Invasive alien plants are removed and controlled ; and
- Aquifer and surface water quality and quantity is monitored.

Action Project 6.4.4 (i): Obtain all standards for water quality from the Municipality, review monitoring the results against these standards and take appropriate actions should any standard not be met.

6.4.5 Soil Erosion Control

Gradual natural soil erosion processes will be allowed to continue unless this is a threat to the achievement of the Nature Reserve's management objectives. However, in the case of human-induced and / or aggravated erosion, appropriate remedial management action must be taken. Potential human impacts must be avoided through appropriate planning and maintenance of infrastructure, especially trails/ pathways.

Human-induced soil erosion in UNR is primarily the result of the presence of invasive alien vegetation and management tracks of the Nature Reserve. Old quarry sites / borrow pits and areas that have been cleared of invasive alien vegetation need rehabilitation plans primarily to prevent soil erosion.

Extensive sites of potential or aggravated soil erosion must be mapped, and the rehabilitation prioritised annually.

Rehabilitation of soil erosion sites should follow the guidelines presented by Coetzee (2005) and the EKZNW Track and Trail Maintenance Manual.

Action Project 6.4.5 (i): Map all extensive or potential human-induced / aggravated soil erosion sites and annually monitor the condition of these sites in order to prioritise rehabilitation work.

6.4.6 Wildlife Management

The primary objective of wildlife management at UNR will be to maintain, within the ecological carrying capacity of the Nature Reserve, viable indigenous wildlife populations that historically occurred in the area and are suited to the particular habitats offered by UNR.

Where possible, a minimal intervention management strategy will be followed in terms of indigenous wildlife management. Exceptions would be the specific strategies identified in terms of the National Norms and Standards for the management of specific species in accordance with NEMBA and / or this IMP and / or additional actions recommended by the PAMC. The latter interventions will only be considered for the following purposes:

- safeguarding populations of Rare and Endangered species;
- achieving UNR's Management Objectives and set Conservation Targets;
- complying with UNR's IMP Management Guidelines;
- the maintenance of populations of wildlife species to avoid the over-utilisation of the available natural resources;
- research and monitoring purposes; and
- translocation to other state or private protected areas.

Wildlife that have been injured and are highly unlikely to survive are to be destroyed on the authority of the UNR Manager. The Reserve Manager must, however ensure that all relevant information is recorded and the relevant data / specimens / material provided is provide to the Ecological Advice component staff responsible for processing and recording such information. A copy of these records must be kept in the reserve office record system. The by-products such as meat and horns must be disposed of according to tariffs and procedures determined by EKZNW and in accordance with the relevant legislation.

Action Project 6.4.6 (i): Compile and implement a Wildlife Protection Management Plan.

Action Project 6.4.6 (ii): Compile and implement a Priority Species Management Plan and determine status of priority species.

6.4.6.1 Introductions of Indigenous Animal Species into UNR

The introduction of indigenous animal species into the Nature Reserve must be considered in terms of **Corporate Policy D2.21** (See **Appendix 2**) and taking into account their natural distribution range, genetic compatibility, social behaviour characteristics, impacts on existing populations, habitat requirements, practical management and possible interaction with human communities adjacent to UNR.

The introduction of **any** animal species (individual or group) must be done in collaboration with the responsible Ecological Advice staff, with the approval of the PAMC and must meet the requirements of any relevant Transfrontier Park Wildlife Translocation policy and protocol adopted for a Transfrontier Conservation Area or bioregion. The introduction must be adequately documented. A animal species introduction policy for UNR is needed for the effective application of this policy guideline.

Action Project 6.4.6.1 (i): Develop a policy that addresses the introduction and population monitoring of animal species into the Nature Reserve.

6.4.6.2 Game Population Management

Ongoing game population management will be aimed at maintaining a diversity of species without negatively affecting vegetative diversity and cover. The objective of this management is to control numbers as far as possible within the ecological carrying capacity of the Nature Reserve. Ungulate game species populations that are not strongly territorial will be subject to a population management programme as their population numbers have the potential to increase to unsustainable numbers within the confines of UNR. This could result in overgrazing and trampling of the vegetation and eventually accelerated soil erosion and biodiversity losses. To guide game population management, it is therefore necessary to develop a UNR Game Management Policy Guideline document that is reviewed and recommended by the UNR PAMC.

The UNR PAMC will annually meet in February to determine and recommend game removal or augmentation in terms of the Game Management Policy Guideline.

Game removal from UNR will only be undertaken by means of:

- Live Capture; or
- Culling Programmes

Action Project 6.4.6.2 (i): Develop a UNR Game Introduction and Monitoring Programme with guidelines in terms of EKZNW's Wildlife Introduction Policy and implement.

6.4.6.3 Fishery Management

There is no fishery monitoring in UNR.

Action Project 6.4.6.3 (i): Develop a Fish Management Plan for UNR.

6.4.6.4 Bird Management

There is no bird monitoring in UNR.

Action Project 6.4.6.4 (i): Develop a Bird Management Plan for UNR.

6.4.7 Problem Animal Management (Damage Causing Animals)

Animals that become a danger or excessive nuisance to persons and property due to either habituation or aberrant behaviour are to be destroyed humanely or captured and removed from UNR. This also applies to animals that escape or leave and return periodically and cause damage outside UNR.

To minimize the need to control problem animals, pro-active and preventative measures (e.g. fencing) would be considered as a priority, while affected public, visitors or neighbours need to be informed appropriately regarding the relevant animal behaviour and / or dangers. Where the only solution to the problem lies in destroying or capturing animals, the methods decided upon must be with due regard to avoiding possible public criticism.

All human / wildlife conflict matters relating to problem animal management (damage causing animals) must be dealt with in terms of the **NEMBA Norms and Standards for Management of Human and Wildlife Conflict in SA**. This is applicable to animals within and outside of the Nature Reserve.

Action Project 6.4.7 (i): The UNR Conservation Manager must ensure that all complaints and incidents reported are investigated by the relevant UNR staff and/or District Conservation Officer (DCO) as soon as possible. Complaint details, investigation findings and remedial action taken is to be recorded in the prescribed Damage Causing Animals Complaints Register kept on station. Investigations and incident reporting is to be carried out in accordance with **EKZNW's DCO Control Protocol and Guidelines**.

6.4.8 Control over Illegal Use of Natural Resources

Illegal utilisation of UNR's natural resources is not quantified and is to be considered a threat that has the potential to increase significantly if not adequately controlled.

Ongoing vigilance through cost-effective surveillance, monitoring programmes and reaction capabilities is to be undertaken. Direct illegal use of natural resources will be dealt with by UNR management while high risk criminal activities will be monitored and communicated to the relevant security forces as part of a broader co-operative security strategy [See **Action Project 6.3(i)**].

A standing staff component of eight field rangers, primarily tasked with law enforcement, has been appointed, is operative and will be maintained. Should illegal activities increase then it will be necessary for the staff component to be increased accordingly.

To assist in maintaining the Nature Reserve ecological integrity and safeguarding staff and visitors, it is essential that the effectiveness of the field ranger component and their deployment is regularly and critically assessed. A well maintained statistical incident register will be used in such assessments (See also **Monitoring and Evaluation under Par. 6.9.1**).

Action Project 6.4.8 (i): Assessment of the field ranger component will be done monthly.

To resolve illegal utilisation of natural resources by neighbouring communities understanding and awareness through pro-active education amongst these communities is to be undertaken (See **Local Community Involvement: Environmental Education under Par. 6.2.5**).

Action Project 6.4.8 (ii): Management will prosecute those people that illegally utilise natural resources for commercial or other purposes in accordance with the legislation.

6.5 Cultural Resource Management

Management of the cultural heritage is guided by the National Heritage Resources Act and as well as the Amafa / EKZNW Co-operative Conservation Management of Cultural Heritage Agreement (signed July 2005) and must aim to promote the conservation and public appreciation of the cultural

heritage found in UNR (See **Appendix 2, Policy B7**). The policy also provides guidelines in terms of monuments and memorials.

There is a critical need to develop a comprehensive cultural heritage management plan for UNR that would meet national requirements. This plan must cover archaeological, historical sites as well as palaeontological features and living heritage sites.

The cultural heritage of the UNR is non-renewable and importantly may shed further light on the socio-cultural history of the area. These resources are fragile and therefore the Cultural Heritage Management Plan should, in addition, address institutional specialist capacity to guide cultural heritage management on UNR.

Action Project 6.5 (i): Develop a comprehensive Cultural Heritage Inventory and Management Plan for UNR in collaboration with SAHRA and Amafa. Institutional capacity must also be addressed by this plan.

Action Project 6.5 (ii): Identify the archaeological, historical, palaeontological and cultural heritage sites at UNR.

6.6 Resource Utilisation

Requests for extractive use of plant, animal and abiotic resources will be considered provided that such resource use is sustainable, controlled and the natural or cultural heritage conservation management objectives of UNR are not compromised. Resource use must not be allowed to degrade the aesthetic landscape character of UNR or be permitted if management staff lack adequate capacity to ensure effective control over the resource utilisation or by compromising essential functions.

Action Project 6.6 (i): Control or 'bench mark' areas within UNR will be identified where no extractive resource utilisation of indigenous species will take place.

6.6.1 Plants and Animals

Extractive resource use will be undertaken in accordance with, **EKZNW Board Policy Nos. D2.15 and D3.12 to D3.19**.

The PAMC are to evaluate applications with due consideration of:

- any applicable land restitution or other agreements,
- the precautionary principle
- ecological and social acceptability,
- impact on the aesthetic character of the landscape,
- impact on eco-cultural tourism,
- sustainable and wise use of the resource,
- benefit to neighbouring communities,
- equitable access to the resource,
- any benefit transaction that is acceptable within the PFMA framework,
- harvesting operations that are effectively controlled and monitored,
- a written agreement stipulating resource price and /or conditions of harvest, and
- viable alternatives.

Action Project 6.6.1 (i): Evaluate Resource Use in UNR in terms of EKZNW policies for the Evaluation of Extractive Resource Use. If possible, sustainable and feasible in terms of this guideline, develop a resource use management plan and implement.

6.6.2 Bioprospecting

Requests to collect biological material / samples from UNR will be considered by the PAMC in accordance with, amongst others, **EKZNW Board Policy D2.15 (Appendix 2)**, from *bone fide*

South African research institutions until national (NEMBA) and provincial legislation governing bioprospecting is in place.

Bioprospecting activities within the Nature Reserve must be closely monitored and regulated in terms of present environmental legislation.

6.6.3 Abiotic Resources

The extraction of abiotic resources from the protected area will not be permitted unless it has direct bearing on achievement of the UNR management objectives and any application for extraction by an external body will be referred to the EKZNW Board.

6.7 Eco-Cultural Tourism and Marketing

Eco-cultural tourism and marketing must be considered within the framework of, amongst others, **Board Policy E1 to E19** with regard to Commercial Operations.

EKZNW has the mandate to sustainably develop the UNR within the framework of its approved IMP and Concept Development Plan CDP. This will be undertaken to fully realise its eco-cultural tourism and associated income-generating potential, while respecting and giving access to the Nature Reserve's natural and cultural heritage features.

To fulfil this mandate, and in accordance with NEMPAA, EKZNW will initiate the compilation of a CDP. It will address future new development as well as the upgrading and maintenance of all existing infrastructure including tourist facilities (See **Par. 6.10**).

The CDP will be guided by the framework of the UNR Mission, Management Objectives, Zonation and Management Policy Guidelines as adopted and approved for this IMP. The approach adopted in the compilation of the CDP must involve an objective and integrated assessment of the Nature Reserve in terms of its natural and cultural heritage sensitivities, management and bulk infrastructure, its particular sense of place and its visitor infrastructure and facilities

EKZNW will strive to provide a quality eco-cultural tourism experience for visitors to the UNR. A range of appropriate facilities and services will be provided for the use of visitors to UNR. While some of these will serve recreational and social needs, emphasis will be placed on facilities and services that enrich the visitor's understanding and appreciation of the Nature Reserve.

In order for UNR to realise its full income-generating potential:

- The quality and standard of facilities will be maintained at a high level.
- Professional standard tourism service delivery will be provided.
- Its tourism opportunities will be competitively and effectively marketed.
- Cultural heritage tourism will require emphasis.
- A partnership strategy, that takes full advantage of appropriate opportunities for outsourcing (joint venture or otherwise) needs to be put in place while linkages must be sought with other regional tourism initiatives.
- A visitor orientation and interpretation strategy must be developed and implemented.

The above policies and values will be supported by a UNR Eco-cultural Tourism Development and Marketing Strategy that must be compiled and approved.

Action Project 6.7 (i): Cognisant of the UNR IMP and CDP policy guidelines, develop a UNR Eco-cultural Tourism Development and Marketing Strategy that addresses:

- the attainment of professional tourism service delivery standards
- branding and marketing
- linkages with other regional tourist initiatives
- public / private partnerships
- cultural heritage tourism
- visitor awareness, orientation and interpretation

Action Project 6.7 (ii): Develop and communicate formal procedures for local tourism user groups.

Action Project 6.7 (iii): Develop and implement a visitor management plan. Undertake analysis of available recreational facilities and identify opportunities to improve these.

Action Project 6.7 (iv): Align marketing strategy with EKZNW Organisational Plan.

6.8 Environmental Interpretation, Awareness and Education

Environmental interpretation, awareness and education of UNR's natural and cultural resources will be aimed at creating an awareness, understanding and appreciation of the value of these resources among the general public and visitors to the Nature Reserve.

An environmental awareness and education programme must be developed to pro-actively engage, inform and benefit the Nature Reserve's range of neighbouring communities and visitors. **Board Policies D 2.34** (Environmental Education) and **D 4.1** (Neighbour Relations) apply (See **Appendix 2**).

Programmes should not be primarily aimed at children, but provision should be made for developing various programmes, applicable to a wide spectrum of ages and education levels.

Programmes for groups and communities from other areas will be accommodated on request whenever possible. The "Kids and Parks" Programme requires school groups visiting the Nature Reserve's, to submit a lesson plan before the visit to qualify for a concession. The visit takes place during schooling days.

Where and whenever possible members of the local community (e.g. community tour guides) will be empowered and used to run appropriate environmental education tours.

Action Project 6.8 (i): Develop a UNR environmental awareness education programme specifically for neighbouring communities and the general public interest groups.

Action Project 6.8 (ii): Compile educational material on environmental and cultural aspects of the Nature Reserve.

Action Project 6.8 (iii): Engage in biodiversity and cultural education with schools, communities, interest groups.

Action Project 6.8 (iv): Facilitate access to educational information pertaining to the history of the reserve and surrounding areas.

An interpretation programme using signage, displays and information media must be developed to effectively direct and inform visitors in respect of appropriate natural and cultural features of the area. The format of these signs must be standardised and trail marking must be a priority.

Action Project 6.8 (v): Develop an interpretation programme in a standard format for the Nature Reserve.

An investigation to identify synergies in the needs of various government or other institutions in the area to develop awareness programmes (e.g. social education of the youth) must be undertaken and if feasible, to combine environmental awareness education with these other programmes. In this way, it will be possible to combine resources to reach a wider target audience.

Action Project 6.8 (vi): Investigate the possibility of combining environmental awareness programmes with social programmes offered by other institutions in the general area of the Nature Reserve.

6.9 Research

Priority will be given to research that will provide information and understanding that is of direct benefit to UNR and will guide management interventions required to achieve the protected area's conservation targets as well as natural and cultural heritage management objectives in the most cost-effective manner. Opportunities will, however, be considered and provided for both applied *and* theoretical research of local, provincial or national importance.

Long term research and monitoring is desirable and necessary as a result of the dynamic and stochastic nature of the ecosystem and to ascertain whether management actions are having their desired affect in terms of achieving conservation targets as well as natural and cultural heritage management objectives.

Partnerships and agreements with appropriate academic and research institutions will be promoted to stimulate and encourage the desired research in UNR. In order to achieve this, the following will be undertaken:

- Management and scientific staff as well as external researchers must identify and prioritise research requirements. This research priority list will then be circulated to tertiary research institutions and made available on the web site.
- All baseline abiotic and biotic data collected must be collated and stored in databases as well as GIS data layers to assist researchers in the planning of research projects and interpretation of data.
- Appropriate permanent research facilities must be developed within or bordering the Park in order to facilitate research work.

Action Project 6.9 (i): Develop a prioritised UNR natural and cultural heritage research project list.

Action Project 6.9 (ii): Develop procedures that will ensure that all abiotic and biotic data collected are captured in managed databases and GIS data layers for interrogation by researchers and managers.

All proposals to undertake research within the Nature Reserve will be submitted and evaluated using the procedures outlined in the *Guidelines for the Registration and Administration of Research Projects Undertaken by or through Ezemvelo KZN Wildlife (August 2002)* [**Appendix 1, Item 6**]. Where research requires the collection of biological material, a collection permit will be issued in accordance with approval of the research project..

A copy of all publications is to be lodged within the Nature Reserve, the Regional Office as well as the Head Office library and details captured using appropriate keywords into Region's bibliography.

An UNR bibliography and reference library facilities is to be developed together with procedures to maintain a hard and digital copy of all UNR related research work, all documents listed as IMP supporting documentation in **Appendix 1** as well as any new supporting management documentation produced. Libraries must be maintained at the Nature Reserve and at the Regional Office. Strict curation rules shall apply and the ultimate responsibility for the curation of this library at UNR must be allocated to the most senior reserve management position and the Regional Co-ordinator: Ecological Advice.

Action Project 6.9 (iii): Identify and develop reference library facilities and procedures to maintain hard and digital copies of all UNR related research work, all documents listed as IMP supporting documentation in **Appendix 1** as well as any new supporting management documentation produced. Strict curation rules shall apply and the ultimate responsibility for the curation of this library at UNR must be allocated to the most senior reserve management position and the Co-ordinator: Ecological Advice at the Coastal Regional Office.

6.9.1 Monitoring and Evaluation

Baseline data collection, monitoring and evaluation will be undertaken in order to determine whether conservation targets, natural and cultural heritage management objectives, as well as, eco-cultural tourism objectives and targets are being achieved, and to ascertain the effectiveness of management interventions. Much of this information is required in order to meet the legal reporting requirements of the NEMBA and NEMPAA.

Due to (a) the stochastic (random behaviour) nature of the environment, (b) the effects of long-term climate cycles and change, and (c) the length of time for treatment effects to manifest themselves, it is necessary to implement long term baseline collection and monitoring programmes. It is also necessary to monitor and record all management interventions and the biophysical environment in order to understand the causes for any biological and environmental changes that may occur.

All existing monitoring programs are to be maintained. No programme is to cease and may only do so if in writing by the PAMC minutes to terminate a particular monitoring programme is recommended and is submitted to BCOM for approval.

The **Ecological Advice component** is responsible for:

- Designing all biodiversity monitoring and baseline collection programmes (including the data capture and storage procedures) and ensuring that these will provide data of the right precision and accuracy, and at the right frequency, in order to guide management decision making and to allow for reporting at the required frequency.
- Biodiversity data management, secure storage, analysis, reporting and regular feedback to management.
- Undertaking scientific monitoring and data collection.

The **Biodiversity Conservation Management component** is responsible for:

- The accurate collection of biodiversity baseline data, monitoring and data storage as agreed with the Ecological Advice component.
- Monitoring the use of natural areas by visitors through Limits of Acceptable Change criteria.
- Monitoring cultural sites as outlined in approved and implemented cultural heritage management plans in collaboration with Amafa/SAHRA as the case may be.
- Monitoring energy and water use by conservation management facilities.
- Monitoring development or land use change in the Nature Reserve and in its buffer zone for compliance with set environmental conditions linked to authorisation.
- Monitoring compliance by outside parties with conditions as specified in agreements, contracts etc. in collaboration (where practical and as agreed) with the Ecotourism and Marketing component.

The **Ecotourism and Marketing (Commercial Operations) component** is responsible for:

- Monitoring eco-cultural tourism statistics and revenue generation and reporting against revenue targets.
- Monitoring energy and water use by eco-cultural tourism and associated management facilities.
- Monitoring compliance by outside parties with conditions as specified in agreements, contracts etc. in collaboration (where practical and as agreed) with the Biodiversity Conservation Management component.

Action Project 6.9.1 (i): An appropriate monitoring and evaluation programme for each of the above components is to be developed for the Nature Reserve and implemented.

6.10 Infrastructure

EKZNW has the mandate to maintain, remove, expand or develop infrastructure within UNR for natural and cultural heritage management as well as eco-cultural tourism purposes. However, development projects will only be undertaken if they are:

- aligned with the Nature Reserve's Zonation and Management Guidelines.
- listed as an approved Action Projects either in this IMP or in the Nature Reserve's Concept Development Plan (CDP).
- recommended for implementation by the PAMC and approved by the EKZNW Board's Development Committee.
- compliant with the relevant NEMA regulations and other applicable legal requirements, particularly regarding Environmental and Heritage Impact Assessments.

Infrastructure development outside UNR or on its periphery should always be considered as a preferred option, where practical, to reduce the amount of infrastructure and its resultant impacts on the environment within the Nature Reserve .

UNR management is responsible for infrastructure within the Nature Reserve and must at all times ensure that it is maintained in a safe, sound, clean, serviceable and aesthetically acceptable condition. Tourist accommodation, campgrounds and other facilities are at all times to be maintained to appropriate world-class standards regarding appearance, cleanliness and serviceability.

Utility service providers (e.g. Telkom, Eskom), concessionaires or other groupings that may, through agreements, develop, use and /or maintain infrastructure within UNR, are to be closely monitored by management to ensure that they abide by conditions contained in the relevant agreements and servitude conditions. Management must ensure that their activities do not negatively impact on the achievement of the natural and cultural heritage management objectives as well as landscape character of UNR and that they maintain the same values as expressed above.

All structures are to (as far as possible) harmonised with the surrounding environment and landscape character through appropriate siting, use of colour, building materials, landscaping and screening.

To create a sound foundation for future planning, all infrastructure must be listed on a maintained database and their positions plotted with GPS points on an associated UNR Infrastructure Map. Furthermore, the desirability and effectiveness of this infrastructure will be assessed with a view to reducing the impact of these structures on the UNR environment and landscape.

Action Project 6.10 (i): Develop and maintain a UNR Infrastructure database and map.

Action Project 6.10 (ii): Review the desirability and effectiveness of all present infrastructure associated with UNR with regard to:
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- | |
|--|
| <ul style="list-style-type: none"> • Adequacy • State of repair • Existing maintenance plans and programs • Visitor and staff use, requirements and values • Financial • Environmental impact (negative and positive) • Income generation • Possibilities of outsourcing |
|--|

6.10.1 Entrance Points and Gates

All road entrance points to UNR will be under the control of management, certain functions may, however be outsourced. It is important that the entrance gates be secure at all times to discourage illegal entry to UNR.

6.10.2 Boundary Fence

The purpose of the boundary fence is to keep game in and live stock out of the reserve while demarcating reserve boundaries to assist in preventing illegal entry. There is currently 17 km of fence at 1.5 m high with three strands of wire above. The fence is not standardized.

6.10.3 Internal Fences

There is internal fencing around management infrastructure.

6.10.4 Signage

All access routes to UNR are to be signposted.

Four groups of signage are identified, namely:

Public Entrance Gate and Boundary Signage

A standard for this signage is to be developed that clearly depicts that one is entering the UNR with any camp /office names in a secondary position.

Management Infrastructure Area Signage

Interpretation, directional and information signage in UNR must have a standardised format.

Trail Signage

The trail signage format is an animal print on concrete and arrows indicating the trail direction.

Memorial Plaques

In terms of the Public Monuments and Memorials Policy and the Names of Protected Areas Under the Control of EKZNW Policy, all applications for such memorials are to be made to the Board who would approve or not in terms of design and location. All such applications are subject to an EIA. The key legislation includes the KwaZulu – Natal Heritage Act, 1997 (Act No.10 of 1997) and the KwaZulu – Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997).

6.10.5 Roads, Tracks and Paths

Map 5 indicates the existing vehicle roads / tracks and footpaths used for public access, recreational use or management purposes.

Roads and tracks must be kept to a minimum to maintain the natural character of the landscape as far as possible and to avoid unnecessary negative impacts on the natural and cultural heritage of UNR. In terms of this management guideline, a critical evaluation of the existing road / track and footpath network will be undertaken to identify any that need to be closed or re-aligned. Any section that is approved for closure must be rehabilitated according to a documented rehabilitation programme.

Proposed development of new roads / tracks and footpaths or their closure must be aligned with the Zonation specified in this IMP and must follow the appropriate legal and other procedures after recommendation from the PAMC.

Management must ensure that the existing vehicle road / tracks and footpaths on UNR are effectively maintained to the appropriate standards in order to support the relevant use and avoid soil erosion as well as other negative impacts on the environment.

Roads and tracks that are heavily used by vehicles or sections prone to accelerated soil erosion must be tarred, paved, concreted or upgraded to 'all-weather' gravel roads that have been treated with a dust repellent (sealer).

Action Project 6.10.5 (i): All vehicle roads and tracks must be evaluated for the suitability of their alignment and recommendations made for new vehicle roads and tracks, repair or closure (with rehabilitation measures) of existing ones.

Action Project 6.10.5 (ii): Investigate [in consultation with SAHTOA (SA Hiking Trail Owners Association)] the potential for a hiking trail routes and day walks in UNR and make recommendations on professional hiking trail evaluation, design, construction, maintenance, accreditation, marketing, management as well as estimated revenue and expenditure. Implement if feasible.

6.10.6 Staff Accommodation

Where essential for the efficient functioning of UNR, management will consider the provision and maintenance of staff accommodation, according to Corporate Norms and Standards. Accommodation is to meet standards as set by EKZNW's Technical Division and any development or maintenance in this regard must form part of the CDP.

Staff will be encouraged to acquire their own housing and live outside UNR, where practically possible and financially viable. In such cases, official transport to and from UNR can be considered depending on site specific circumstances and applicable corporate policies.

6.10.7 Offices, Workshops, Stables and other Infrastructure

UNR management must ensure that all infrastructure within the Nature Reserve, is always maintained in a clean, neat and functional state and that these work areas meet Occupational Health and Safety Act standards.

All service areas (e.g. workshops, waste management and storage areas) must be effectively screened from public view using indigenous plantings.

Management will also be responsible for ensuring that any facility for keeping animals encamped or in captivity on UNR are legally compliant or maintained at generally accepted standards for keeping and caring for such animals.

6.10.8 Services

Management must strive to ensure that wherever possible, service infrastructure such as electricity, telephone, water supply *etc.* are located appropriately in the landscape or effectively screened to minimise their aesthetic and / or other environmental impacts. Reserve management must also strive to ensure that such infrastructure is maintained in a safe, serviceable and aesthetically acceptable condition by the relevant service providers.

6.10.9 Radio Communication and other Communication Equipment

UNR management uses a two-way radio system for efficient management. Any future radio repeater stations or similar communication towers must comply with EIA conditions.

6.10.10 Waste Management

6.10.10.1 Domestic Solid Waste

All domestic waste is to be sorted for recycling. The recyclable waste is to be removed to authorized recycling depots/ companies. The use of organic waste for compost purposes permitted but will be subject to strict conditional approval on the recommendation of the UNR PAMC. All historical waste disposed sites in UNR are to be rehabilitated.

Solid waste management procedures will be closely monitored by management to prevent pollution and other adverse impacts, especially of the water resources. All waste receptacles (for staff or the public) will be animal-proof (especially against baboons and monkeys) and maintained as such.

Action Project 6.10.10.1 (i): Develop an integrated waste management plan for UNR.

Action Project 6.10.10.1 (ii): Develop, install and maintain effective standardized solid waste receptacles for UNR that are animal and baboon / monkey-proof.

6.10.10.2 Sewage

All sewage systems are to be investigated and their compliance verified. New systems must be installed where there is non-compliance with legal requirements.

Existing infrastructure at UNR has septic tank / French drain sewage systems that can possibly be contaminating ground and surface water. These systems must be replaced with more environmentally friendly systems.

Action Project 6.10.10.2 (i): All sewage systems in UNR to be investigated for legal compliance. A phased development plan to upgrade existing systems and septic tank / French drain systems is to be put in place.

6.10.11 Water- and Energy-saving Measures

Borehole water is pumped to water tanks, within UNR, where it is purified. Solar power is used at the Pont outpost as opposed to electricity.

Action Project 6.10.11 (i): Develop a phased plan to install standardised (reliable and tested) water- and energy-saving devices throughout UNR as soon as practically possible.

6.10.12 Aircraft Landing Fields

No airstrips are permitted inside UNR except for helicopter landing pads (if required) maintained to the minimum aviation standards at selected sites within the natural zone. These are primarily for emergency purposes or for such other purposes on the approval of PAMC after taking into account the effect on biodiversity and the environment, 'sense of place' values and tourist disturbance aspects.

Action Project 6.10.12 (i): Determine the requirement for helicopter landing pads on UNR. If required and approved, select site/s and maintain according to minimum aviation standards.

6.10.13 Staff and Visitor Safety

All requirements of the Occupational Health and Safety Act and other applicable legal requirements must be met to provide for the safety of staff and visitors in and around infrastructure installations at UNR (e.g. fire and electricity).

Action Project 6.10.12 (i): Management will maintain a secure entry controls system and maintain a high level of internal security in order that visitors and their belongings can be safe and secure.

Action Project 6.10.12 (ii): All Reserve staff must receive appropriate training regarding all health and safety aspect and must receive refresher course training as required on a regular basis.

6.11 Concept Development Plan

In compliance with NEMPAA and in order to initiate the development of new infrastructure as well as the strategic maintenance of existing infrastructure, EKZNW will initiate the compilation of a Conceptual Development Plan (CDP). The CDP will address the future development, improvement and maintenance of all infrastructure including eco-cultural tourism facilities.

The CDP will be guided by the framework of the UNR Mission, Management Objectives, Zonation and Management Policy Guidelines as adopted and approved for this IMP. The approach adopted in the compilation of the CDP must involve an objective and integrated assessment of the Nature Reserve in terms of its natural and cultural heritage sensitivities, management and bulk infrastructure, its particular sense of place and its visitor infrastructure and facilities.

6.11.1 Institutional Framework for Implementation of Development Projects contained in this CDP

The UNR management has the mandate to manage and sustainably develop the protected area to fully realise its ecotourism and associated income-generating potential, while respecting and giving access to the protected area's biodiversity and cultural values. Infrastructural planning and development of the protected area will be undertaken cognizant of the requirements the National

Environmental Management Act (No. 107 of 1998) and the National Heritage Resources Act (No. 25 of 1999) and the KwaZulu-Natal Heritage Management Act (No. 10 of 1997).

This CDP is guided by the framework of the UNR's Vision, Mission, Management Objectives, Zonation, Policy Framework and the Guiding Principles of this IMP. The approach adopted in the compilation of the CDP involves an objective and integrated assessment of the Reserve in terms of its natural and cultural heritage sensitivities, management and bulk infrastructure, its particular sense of place and its visitor infrastructure and facilities.

6.11.2 Strategic Considerations and Management Guidelines

The general strategic direction for the protected area set by the CDP for 2008 to 2013 is essentially one of consolidating and improving existing management and tourism infrastructure within the protected area while also seeking to improve links with local and regional conservation and tourism initiatives.

The emphasis in the CDP is on the improvement of the standard of existing infrastructure as well as day visitor facilities throughout the protected area. Facilities for people with disabilities are to receive attention through specific policy formulation which will be applied to built infrastructure and related visitor amenities. It is envisaged that the implementation of this CDP will be instrumental in broadening access to the Reserve by a greater spectrum of the public and will provide a platform towards improving income generation, benefit flow management and inform any further appropriate development during the next five year planning period.

6.11.3 Alignment of CDP with Local Authority Integrated Development Plans

Emphasis has been placed on the importance of a cooperative governance relationship between UNR management and the Hibiscus Municipality, to ensure that continuous development planning in and around the Reserve is appropriately aligned as required by the National Environmental Management: Protected Areas Act and the Local Government: Municipal Systems Act.

It is critical from a biodiversity conservation, tourism and benefit flow perspective to preserve the aesthetic qualities of the natural landscape or "sense of place" which is strongly linked to retaining the natural character of the landscape both in and adjacent to the protected area.

Action Project 6.11.3 (i): Develop a Concept Development Plan and align with Municipal Planning.

7 IMP REVIEW AND AMENDMENT PROCEDURES

7.1 Five-Yearly Review and Amendment Procedures

This UNR IMP will be reviewed every five years with the next review period planned for 2013 to revise and amend the IMP for the following five years, namely 2014 to 2018. If deemed appropriate by the PAMC, the review can take place sooner.

The EKZNW Management Planning Steering Committee in collaboration with the Co-ordinator: Management Planning will give guidance on the extent of public / stakeholder participation required before submitting the amended / updated IMP for approval to the MEC. The extent of the public / stakeholder participation (apart from that undertaken with the Local Board and the Joint Management Committee will depend on the nature and extent of amendments recommended by the relevant UNR PAMC.

Action Project 7.1 (i): The PAMC must undertake a five-yearly review of this IMP in 2013 for the following five years.

7.2 Annual Review and Amendment Procedures

The PAMC will convene annually in November to monitor and evaluate IMP progress, plan and, if necessary, recommend the re-prioritisation of management activities for the next year. The PAMC must, as record of these meetings, submit a report to the EKZNW Management Planning Co-ordination Unit which contains the following:

- Any recommended **minor amendments or corrections** to the IMP that do not affect the substance of the Mission, Management Objectives, Zonation, Management Policy Framework and Guiding Principles;
- The result of an annual evaluation by the PAMC of the Management Effectiveness Level achieved for UNR. This must be calculated using the World Bank Protected Area Management Effectiveness Evaluation Tool (Stolton *et al*, 2007);
- The cumulative number of Action Projects per Management Objective that have been completed, activated or not activated; as well as
- An indication of progress towards achieving Conservation Targets set in the IMP.

The PAMC will also be responsible for the recommendation of any policies, projects and plans that are developed as a result of the implementation of this IMP or other *ad hoc* projects *etc.* not covered by the IMP that have operational, financial and human resource or ecological implications (e.g. research projects that have not been identified according to IMP guidelines, or *ad hoc* funding received for the development of unplanned recreational facilities).

Any proposed significant amendments that are deemed necessary / urgent and that are likely to result in the amendment of the Mission, Management Objectives, Management Policy Framework and Guiding Principles contained in the UNR IMP must be supported by the PAMC, the Integrated Management Planning Steering Committee and BCOMM before being subjected to the appropriate public / stakeholder participation process and before BCOMM recommends that the proposed amended IMP is submitted for authorisation through the EKZNW Board to the MEC.

The EKZNW Management Planning Co-ordinator must ensure that any minor or significant IMP amendments that are appropriately approved, are duly noted / recorded and that a new digital 'master copy' (Word) version is generated and archived with the EKZNW Management Planning Co-ordination Unit as well as ensuring that updated 'read only' copies are distributed to the relevant Head Office sections and Regional General Manager who must ensure that the updated 'read only' digital and / or hard copies are distributed to all staff requiring these. The EKZNW Management Co-ordinator will furthermore be responsible to ensure that website / intranet copies are updated at the same time.

Action Project 7.2 (i): Convene a PAMC meeting annually in November to monitor, evaluate and report on progress in terms of this IMP, plan and, if necessary, recommend the re-prioritisation of management activities or amendments to the IMP. Ensure all resource needs are submitted when budgets are being prepared.

8 PROJECTS FOR ACTION CORRELATED WITH MANAGEMENT OBJECTIVES

While the tables below indicate the list of identified Action Projects that support the achievement of the specific objectives, it must be recognised that a number of other actions relating to ongoing protected area management, take place. Such actions would relate particularly to security, maintenance (buildings, roads, fences, veld management, etc) and relationships with stakeholders. It is important that they be detailed and included when developing budgets and business strategies.

8.1 List of IMP Action Projects

Table 2 below lists the Action Projects identified in the IMP. The Action Project number corresponds to the relevant paragraph in the text of the IMP.

This is a comprehensive list of Action Projects identified as requiring attention for the management of the protected area. Management will identify, review and act on the identified priority Action Projects that will impact on the achievement of the protected area's objectives. These priorities will be regularly reviewed during this five year period.

It is important to note that these IMP Action Projects will not be interpreted in isolation but will be interpreted and operationalised within the context of the associated narrative that precedes the articulation of the Action Project in the relevant paragraph.

Table 2: List of IMP Action Projects

No.	IMP Action Project No.	Project Description
1.	2.1.1 (i)	Obtain written assignment from the MEC re - appointing EKZNW as the management authority for UNR in terms of Section 38(2) of NEMPAA.
2.	2.1.3 (i)	Update and compile a list of all other service providers for UNR
3.	2.3 (i)	Management in collaboration with other relevant EKZNW officials, will be tasked with active participation in the review processes of the municipal Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) in order to ensure an effective buffer zone surrounding UNR through an alignment of appropriate land use adjacent to the Nature Reserve.
4.	2.4 (i)	Obtain the services of a land surveyor to register the consolidated UNR with the Surveyor General and seek the proclamation of the area by the MEC.
5.	2.5 (i)	Obtain copies for and review all formal and informal local agreements, leases, servitude arrangements <i>etc.</i> pertaining to UNR and document, update, maintain and monitor these appropriately authorised agreements. All informal and revised agreements are to be formalised and approved by the Executive.
6.	2.6 (i)	Indicate any subsequent purchases of properties, inclusions or disposal of areas, using the correct property description as supplied by the deed of transfer, lease agreement <i>etc.</i> In cases where agreements are "unofficial", reference should be made to the relevant documentation.
7.	2.6 (ii)	Annually explore and investigate opportunities to extend conservation land use in and around UNR.
8.	3.3 (i)	Update the previous land use of UNR.
9.	3.4 (i)	Update the conservation history for UNR indicating the importance of the proclamation.
10.	3.5 (i)	Maintain the collection and storage of climatic data records. Include the Predictive Mean maximum and minimum temperatures in conjunction with mean rainfall for UNR.
11.	3.6.3 (i)	Investigate the soil types and the implications for future infrastructural development.
12.	3.6.3 (ii)	Identify the biodiversity importance and implications of immature soil

		profiles for management.
13.	3.6.3 (iii)	Map the soils showing areas susceptible to erosion.
14.	3.6.3 (iv)	Write and submit for approval, a soil erosion control plan.
15.	3.8 (i)	Write a management plan in order to maintain and monitor the quantity and quality of water in the rivers.
16.	3.9.3 (i)	Update the flora types and map for UNR.
17.	3.9.3 (ii)	Develop a flora monitoring programme for UNR.
18.	3.9.3 (iii)	Compile and implement a flora management plan that addresses key threats to the priority flora.
19.	3.9.3 (iv)	Compile a flora map and diagnostics species list.
20.	3.10 (i)	Copies of the Species Checklists will be updated and filed manually and digitally at the UNR Management and Regional Offices as well as the Conservation Manager for easy reference. The copies will be updated in accordance with any authorised amendments. A fixed protocol for compiling and maintaining these checklists needs to be developed to ensure that they provide accurate, comparable and contemporary baseline data for management and scientific purposes.
21.	3.10.1 (i)	Compile through further research and collecting a checklist of the invertebrate species found in UNR.
22.	3.10.2 (i)	Identify the major threats to Fish Species in UNR.
23.	3.10.2 (ii)	Develop and implement a Fish Species Monitoring Programme.
24.	3.10.3 (i)	Compile through further research and monitoring, checklists of the Herpetofauna.
25.	3.10.3 (ii)	Develop and implement a Herpetofauna Species Monitoring Programme.
26.	3.10.4 (i)	Determine which of the bird species breed in the Nature Reserve, and ensure that management protocols are set in place to maintain and conserve these breeding sites for the long – term persistence of the species.
27.	3.10.4 (ii)	Identify the major threats to Avifauna in UNR.
28.	3.10.4 (iii)	Develop and implement an Avifauna Species Monitoring Programme.
29.	3.10.5 (i)	Identify the major threats to Mammals in UNR.
30.	3.10.5 (ii)	Develop and implement a Mammals Species Monitoring Programme.
31.	3.11 (i)	Map the GPS Co-ordinates and provide Management Plans for these sites.
32.	3.11 (ii)	Identify the archaeological, historical, palaeontological and cultural heritage sites at UNR. Ensure compliance with requirements of heritage legislation.
33.	3.12 (i)	Conduct research on the archaeology of the UNR.
34.	3.12 (ii)	Make use of archaeology and evidence of the past cultures that inhabited the area in describing the cultural heritage value of UNR.
35.	3.13 (i)	Update the Sociological context and its importance to UNR.
36.	3.14 (i)	Update the economic context and its importance for UNR.
37.	3.15 (i)	Identify and map infrastructure using GIS and include in a spatial database. Develop standard protocols and procedures for infrastructure in UNR.
38.	3.15 (ii)	Repair, where necessary, the standard and state of the existing infrastructure provided in the UNR.
39.	3.15.1 (i)	Investigate future opportunities for eco – cultural tourism infrastructure for UNR.
40.	3.15.4 (i)	Develop a standardised fence for the boundary and put it in place.
41.	3.15.4 (ii)	Develop a maintenance plan for all trails and fences.
42.	3.15.5 (i)	Update UNR Map to include the location of all water supply infrastructure.
43.	3.15.6 (i)	Compile MoA between different service providers and UNR. Manager needs to ensure that he is familiar with all agreements.

44.	4.2 (i)	Implementation of EKZNW IEM Policy. Create awareness of or inform surrounding landowners on the IEM process and legislation through fora.
45.	4.2 (ii)	Participate as a key stakeholder in EIA applications for developments near the Nature Reserve that may impact on the protected area.
46.	4.2 (iii)	Participate in existing liaison fora.
47.	4.6 (i)	Set conservation targets and monitoring strategies for the identified species.
48.	4.6 (ii)	Develop conservation targets and monitoring strategies for Cultural, Business and Partnerships Objectives.
49.	5 (i)	Revise the existing UNR zonation plan in accordance with the new EKZNW standard zonation system as soon as it is developed and approved.
50.	6.1.1 (i)	Develop a five-year Strategic Management Plan and Business Plan for UNR.
51.	6.1.1 (ii)	Initiate a resource economics study of the Nature Reserve to determine its economic value regarding the provision of ecosystem services and its contribution to the local and regional economy.
52.	6.1.2 (i)	Investigate and develop an appropriate human resource structure and capacity of UNR with a view to improving effectiveness and efficiency in achieving UNR objectives and informing the Business Plan.
53.	6.2 (i)	EKZNW will continue to work collaboratively with landowners and surrounding communities to improve conservation management of UNR for the benefit of all.
54.	6.2.1 (i)	Establish a Local Board for the Nature Reserve.
55.	6.2.2 (i)	The Community Levy will continue to be collected for the development and upliftment of the local communities.
56.	6.2.3 (i)	Training of members of the local community will continue to be practiced. Investigate other employment opportunities that will benefit the surrounding local communities of UNR.
57.	6.2.5 (i)	Investigate and implement additional environmental education programmes for communities surrounding UNR.
58.	6.2.6 (i)	Establish effective provincial Transfrontier collaborative structures for the UNR with the Eastern Cape.
59.	6.2.7 (i)	Annually in March of each year arrange a public meeting to give feedback on progress, planned projects and encourage informal local community participation.
60.	6.3 (i)	Develop an integrated security strategy for the Nature Reserve that ensures collaboration with all relevant institutions.
61.	6.3 (ii)	Develop and implement a Civil Emergency Procedures Plan.
62.	6.4.2 (i)	Develop a UNR Fire Management Plan that provides comprehensive fire management objectives, scientific understanding, management actions, legal compliance, personnel training requirements, monitoring and research required and resources needed.
63.	6.4.2 (ii)	Develop a computerized decision support tool linked to GIS that will be included in the Fire Management Plan, to assist in the planning of burns at the annual Fire Workshop. This rule-based tool will ensure that UNR- wide and area-specific fire management objectives can be simultaneously achieved wherever possible, and will allow for flexibility in response to unplanned fires.
64.	6.4.2 (iii)	Promote and champion (in cooperation with DWAF and the "Working on Fire" programme) the establishment of FPAs on the borders of UNR.
65.	6.4.2 (iv)	Arrange a UNR Fire Management Workshop in February of each year.
66.	6.4.3 (i)	Compile and implement an alien species management plan. Identify and itemize indicator species and their current species densities in UNR.

67.	6.4.3.1 (i)	Undertake a full species survey for alien plant species present and map this.
68.	6.4.3.1 (ii)	Develop an ongoing time-bound programme to effectively control declared alien weeds and invader plants within UNR and 1 km beyond (buffer area) the Nature Reserve boundary .
69.	6.4.3.1 (iii)	Develop a phased 3-year plan to address the existing non-invasive alien plants in UNR.
70.	6.4.3.2 (i)	Develop a control programme for alien animals present in UNR.
71.	6.4.3.2 (ii)	Develop a management strategy that will minimize the negative impact of alien fish and promote the establishment of sustainable populations of fish species indigenous to UNR.
72.	6.4.3.2 (iii)	<p>Develop a new, equitable policy for keeping personal and official domestic animals and livestock in the Nature Reserve that includes procedures for dealing in a consistent manner with alien animals that stray into the Park. This policy will, <i>inter alia</i> clearly address:</p> <ul style="list-style-type: none"> • Threats to biodiversity conservation as a priority. • Reducing the numbers of such animals to an absolute minimum. • Designating areas where these animals will be kept. They will not be allowed to roam or feed in the Park (except for official patrol horses when on patrol) or interfere in any way with tourists. • The proper and hygienic care of these animals. • Minimum standards (aesthetic acceptability, sizes, neatness and cleanliness) of facilities housing these animals e.g. stables, camps, cages etc. • Disciplinary measures for staff transgressing these regulations or failing to enforce these measures.
73.	6.4.4 (i)	Obtain all standards for water quality from the Municipality, review monitoring results against these standards and take appropriate actions should any standard not be met.
74.	6.4.5 (i)	Map all extensive or potential human-induced / aggravated soil erosion sites and annually monitor the condition of these sites in order to prioritise rehabilitation work.
75.	6.4.6 (i)	Compile and implement a Wildlife Protection Management Plan
76.	6.4.6 (ii)	Compile and implement a Priority Species Management Plan and determine status of priority species.
77.	6.4.6.1 (i)	Develop a policy that addresses the introduction and population monitoring of animal species into the Nature Reserve.
78.	6.4.6.2 (i)	Develop an UNR Game Introduction and monitoring Programme with guidelines in terms of the EKZNW Wildlife Introduction Policy and implement.
79.	6.4.6.3 (i)	Develop and implement a Fishery Management Plan for UNR.
80.	6.4.6.4 (i)	Develop and implement a Bird Management Plan for UNR.
81.	6.4.7 (i)	The UNR Conservation Manager must ensure that all complaints and incidents reported are investigated by the relevant UNR staff and or District Conservation Officer (DCO) as soon as possible. Complaint details, investigation findings and remedial action taken is to be recorded in the prescribed Damage Causing Animals Complaints Register kept on station. Investigations and incident reporting is to be carried out in accordance with EKZNW's DCo Control Protocol and Guidelines.
82.	6.4.8 (i)	Assessment of the field ranger component will be done monthly.
83.	6.4.8 (ii)	Management will prosecute those people that illegally utilise natural resources for commercial or other purposes in accordance with the legislation.
84.	6.5 (i)	Develop a comprehensive Cultural Heritage Inventory and Management Plan for UNR in collaboration with SAHRA and Amafa.

		Institutional capacity will also be addressed by this plan.
85.	6.5 (ii)	Identify archaeological, historical, paleontological and cultural heritage sites at UNR. Ensure compliance with the requirements of Amafa.
86.	6.6 (i)	Control or 'bench mark' areas within UNR will be identified where no extractive resource utilisation of indigenous species will take place.
87.	6.6.1 (i)	Evaluate Resource Use in UNR in terms of EKZNW policies for the Evaluation of Extractive Resource Use. If possible, sustainable and feasible in terms of this guideline, develop a resource use management plan and implement.
88.	6.7 (i)	Cognisant of the UNR IMP and CDP policy guidelines, develop UNR Eco-cultural Tourism Development and Marketing Strategy that addresses: <ul style="list-style-type: none"> • the attainment of professional tourism service delivery standards. • branding and marketing. • linkages with other regional tourist initiatives. • public / private partnerships. • cultural heritage tourism. • visitor awareness, orientation and interpretation.
89.	6.7 (ii)	Develop and communicate formal procedures for local tourism user groups.
90.	6.7 (iii)	Develop and implement a visitor management plan. Undertake analysis of available recreational facilities and identify opportunities to improve these.
91.	6.7 (iv)	Align marketing strategy with EKZNW organisational plan.
92.	6.8 (i)	Develop an UNR environmental awareness education programme specifically for neighbouring communities and the general public interest groups.
93.	6.8 (ii)	Compile educational material on environmental and cultural aspects of the Nature Reserve.
94.	6.8 (iii)	Engage in biodiversity and cultural education with schools, communities, interest groups and staff.
95.	6.8 (iv)	Facilitate access to educational information pertaining to the history of the Nature Reserve and surrounding areas.
96.	6.8 (v)	Develop an interpretation programme in a standard format for the Nature Reserve.
97.	6.8 (vi)	Investigate the possibility of combining environmental awareness programmes with social programmes offered by other institutions in the general area of the Nature Reserve.
98.	6.9 (i)	Develop a prioritised UNR natural and cultural heritage research project list.
99.	6.9 (ii)	Develop procedures that will ensure that all abiotic and biotic data collected are captured in managed databases and GIS data layers for interrogation by researchers and managers.
100.	6.9 (iii)	Identify and develop reference library facilities and procedures to maintain hard and digital copies of all UNR related research work, all documents listed as IMP supporting documentation in Appendix 1 as well as any new supporting management documentation produced. Strict curation rules will apply and the ultimate responsibility for the curation of this library at UNR will be allocated to the most senior reserve management position and the Regional Co-ordinator: Ecological Advice at the Coastal Regional Office.
101.	6.9.1 (i)	An appropriate monitoring and evaluation programme for each of the above components is to be developed for the Nature Reserve and implemented.
102.	6.10 (i)	Develop and maintain an UNR Infrastructure database and map.
103.	6.10 (ii)	Review the desirability and effectiveness of all present infrastructure associated with Nature Reserve with regard to:

		<ul style="list-style-type: none"> • Adequacy. • State of repair. • Existing maintenance plans and programs. • Visitor and staff use, requirements and values. • Financial. • Environmental impact (negative and positive). • Income generation. • Possibilities of outsourcing.
104.	6.10.5 (i)	All management tracks will be evaluated for the suitability of their alignment and recommendations made for new vehicle roads and tracks, repair or closure (with rehabilitation measures) of existing ones.
105.	6.10.5 (ii)	Investigate [in consultation with SAHTOA (SA Hiking Trail Owners Association)] the potential for a hiking trail routes and day walks in UNR and make recommendations on professional hiking trail evaluation, design, construction, maintenance, accreditation, marketing, management as well as estimated revenue and expenditure. Implement if feasible.
106.	6.10.10.1 (i)	Develop an integrated waste management plan for UNR.
107.	6.10.10.1 (ii)	Develop, install and maintain effective standardized solid waste receptacles for UNR that are animal and baboon / monkey-proof.
108.	6.10.10.2 (i)	All sewage systems in UNR will be investigated for legal compliance. A phased development plan to upgrade existing systems and septic tank / French drain systems will be put in place.
109.	6.10.11 (i)	Develop a phased plan to install standardised (reliable and tested) water- and energy-saving devices throughout UNR as soon as practically possible.
110.	6.10.12 (i)	Determine the requirement for helicopter landing pads on UNR. If required and approved, select site/s and maintain according to minimum aviation standards.
111.	6.10.12 (i)	Management will maintain a secure entry controls system and maintain a high level of internal security in order that visitors and their belongings can be safe and secure.
112.	6.10.12 (ii)	All Reserve staff must receive appropriate training regarding all health and safety aspect and must receive refresher course training as required on a regular basis.
113.	6.11.3 (i)	Develop a Concept Development Plan and align with Municipal Planning.
114.	7.1 (i)	The PAMC will undertake a five-yearly review of this IMP in 2013 to revise and amend the IMP for the following five years.
115.	7.2 (i)	Convene a PAMC meeting annually in November to monitor, evaluate and report on progress in terms of this IMP, plan and, if necessary, recommend the re-prioritisation of management activities or amendments to the IMP.

8.2 Alignment of IMP Action Projects with Prioritised Management Objectives

The 115 IMP Action Projects from **Table 3** have been aligned with the Management Objectives and are listed in **Table 3** below.

The IMP Action Projects in many cases are cross-cutting in achieving more than one objective. To aid prioritisation they have been placed (listed in number sequence) under the objective where they are likely to make the greatest contribution.

Table 3: IMP Action Projects aligned with and supporting the various UNR Management Objectives.

Conservation	
Conservation of key biodiversity features, biophysical processes, landscapes, abiotic, historical and archaeological resources	
Conserve the Umtamvuna Nature Reserve and its associated biodiversity	
3.6.3 (i)	Identify the biodiversity importance and implications of immature soil profiles for management.
3.6.3 (ii)	Map the soils showing areas susceptible to erosion.
3.6.3 (iii)	Write and submit for approval, a soil erosion control plan.
3.8 (i)	Write the management plan in order to maintain and monitor the quantity and quality of water in the rivers.
3.10.4 (i)	Determine which of the bird species breed in the Nature Reserve, and ensure that management protocols are set in place to maintain and conserve these breeding sites for the long – term persistence of the species.
Facilitate environmental and cultural activities, education and awareness, including access to historical information related to the history of the reserve and the surrounding area.	
6.2.5 (i)	Investigate and implement additional environmental education programmes for communities surrounding UNR.
6.8 (vi)	Investigate the possibility of combining environmental awareness programmes with social programmes offered by other institutions in the general area of the Nature Reserve.
Contribute to the achievement of national and provincial conservation targets	
4.6 (i)	Set conservation targets and monitoring strategies for the identified species.
4.6 (ii)	Develop conservation targets and monitoring strategies for Cultural, Business and Partnerships.
Identify and control threats to biodiversity	
3.10.2 (i)	Identify the major threats to Fish Species in UNR.
3.10.3 (i)	Compile through further research and monitoring, checklists of the Herpetofauna. Identify the major threats to Herpetofauna in UNR.
3.10.4 (ii)	Identify the major threats to Avifauna in UNR.
3.10.5 (i)	Identify the major threats to Mammals in UNR.
Safeguard the archaeological, historical, paleontological and living cultural heritage of the Reserve.	
3.11 (ii)	Identify the archaeological, historical, paleontological and cultural heritage sites at UNR. Ensure compliance with requirements of heritage legislation.
3.12 (i)	Conduct research on the archaeology of the UNR.
3.12 (ii)	Make use of archaeology and evidence of the past cultures that inhabited the area in describing the cultural heritage value of UNR.
6.5 (ii)	Identify archeological, historical, paleontological and cultural heritage sites at UNR. Ensure compliance with the requirements of Amafa.
Other Action Projects supporting UNR Management Objective 1.	
2.1.1 (i)	Obtain written assignment from the MEC re - appointing EKZNW as the

	management authority for UNR in terms of Section 38(2) of NEMPAA.
2.4 (i)	Obtain the services of a land surveyor to register the consolidated UNR with the Surveyor General and seek the proclamation of the area by the MEC.
2.6 (i)	Annually explore and investigate opportunities to extend conservation land use in and around UNR.
3.3 (i)	Update the previous land use of UNR.
3.4 (i)	Update the conservation history for UNR indicating the importance of the proclamation.
3.5 (i)	Maintain the collection and storage of climatic data records.
3.9 (i)	Update the flora types and map for UNR.
3.9 (ii)	Develop a flora monitoring programme for UNR.
3.9 (iii)	Compile and implement a flora management plan that addresses the threats.
3.9 (iv)	Compile a flora map and diagnostics species list.
3.10 (i)	Copies of the Species Checklists will be updated and filed manually and digitally at the UNR Management and Regional Offices as well as the Conservation Manager for easy reference. The copies will be updated in accordance with any authorised amendments. A fixed protocol for compiling and maintaining these checklists needs to be developed to ensure that they provide accurate, comparable and contemporary baseline data for management and scientific purposes.
3.10.1 (i)	Compile through further research and collecting a checklist of the invertebrate species found in UNR.
3.10.2 (ii)	Develop and implement a Fish Species Monitoring Programme.
3.10.3 (ii)	Develop and implement a Herpetofauna Species Monitoring Programme.
3.10.5 (ii)	Develop and implement a Mammals Species Monitoring Programme.
3.11 (i)	Map the GPS Co-ordinates and provide Management Plans for these sites.
3.15 (i)	Identify and map infrastructure using GIS and include in a spatial database. Develop standard protocols and procedures for infrastructure in UNR.
3.15 (ii)	Repair, where necessary, the standard and state of the existing infrastructure provided in the UNR.
3.15.4 (i)	Develop a standardised fence for the boundary and put it in place.
3.15.4 (ii)	Develop a maintenance plan for all trails and fences.
3.15.5 (i)	Update UNR Map to include the location of all water supply infrastructure.
3.15.6 (i)	Compile MoA between different service providers and UNR. Manager needs to ensure that he is familiar with all agreements.
5 (i)	Revise the existing UNR zonation plan in accordance with the new EKZNW standard zonation system as soon as it is developed and approved.
6.3 (i)	Develop an integrated security strategy for the Nature Reserve that ensures collaboration with all relevant institutions.
6.3 (ii)	Develop and implement a Civil Emergency Procedures Plan.
6.4.2 (i)	Develop a UNR Fire Management Plan that provides comprehensive fire management objectives, scientific understanding, management actions, legal compliance, personnel training requirements, monitoring and research required and resources needed.
6.4.2 (ii)	Develop a computerized decision support tool linked to GIS that will be included in the Fire Management Plan, to assist in the planning of burns at the annual Fire Workshop. This rule-based tool will ensure that UNR- wide and area-specific fire management objectives can be simultaneously achieved wherever possible, and will allow for flexibility in response to unplanned fires.
6.4.2 (iii)	Promote and champion (in cooperation with DWAF and the "Working on Fire" programme) the establishment of FPAs on the borders of UNR.
6.4.2 (iv)	Arrange a UNR Fire Management Workshop in February of each year.
6.4.3 (i)	Compile and implement an alien species management plan. Identify and itemize indicator species and their current species densities in UNR.
6.4.3.1 (i)	Undertake a full species survey for alien plant species present.
6.4.3.1 (ii)	Develop an ongoing time-bound programme to effectively control declared alien

	weeds and invader plants within UNR and 1 km beyond (buffer area) the Nature Reserve boundary .
6.4.3.1 (iii)	Develop a phased 3-year plan to address the existing non-invasive alien plants in UNR.
6.4.3.2 (i)	Develop a control programme for alien animals present in UNR.
6.4.3.2 (ii)	Develop a management strategy that will minimize the negative impact of alien fish and promote the establishment of sustainable populations of fish species indigenous to UNR.
6.4.3.2 (iii)	<p>Develop a new, equitable policy for keeping personal and official domestic animals and livestock in the Nature Reserve that includes procedures for dealing in a consistent manner with alien animals that stray into the Park. This policy will, <i>inter alia</i> clearly address:</p> <ul style="list-style-type: none"> • Threats to biodiversity conservation as a priority. • Reducing the numbers of such animals to an absolute minimum. • Designating areas where these animals will be kept. They will not be allowed to roam or feed in the Park (except for official patrol horses when on patrol) or interfere in any way with tourists. • The proper and hygienic care of these animals. • Minimum standards (aesthetic acceptability, sizes, neatness and cleanliness) of facilities housing these animals e.g. stables, camps, cages etc. • Disciplinary measures for staff transgressing these regulations or failing to enforce these measures.
6.4.4 (i)	Obtain all standards for water quality from the Municipality, review monitoring results against these standards and take appropriate actions should any standard not be met.
6.4.5 (i)	Map all extensive or potential human-induced / aggravated soil erosion sites and annually monitor the condition of these sites in order to prioritise rehabilitation work.
6.4.6 (i)	Compile and implement a Wildlife Protection Management Plan
6.4.6.1 (i)	Develop a policy that addresses the introduction and population monitoring of animal species into the Nature Reserve.
6.4.6.2 (i)	Develop an UNR Game Introduction and Monitoring Programme in terms of the EKZNW Wildlife Introduction Policy and implement.
6.4.6.3 (i)	Develop and implement a Fishery Management Plan for UNR.
6.4.6.4 (i)	Develop and implement a Bird Management Plan for UNR.
6.4.7 (i)	The UNR Conservation Manager must ensure that all complaints and incidents reported are investigated by the relevant UNR staff and or District Conservation Officer (DCO) as soon as possible. Complaint details, investigation findings and remedial action taken is to be recorded in the prescribed Damage Causing Animals Complaints Register kept on station. Investigations and incident reporting is to be carried out in accordance with EKZNW's DCO Control Protocol and Guidelines .
6.4.8 (i)	Assessment of the field ranger component will be done monthly.
6.4.8 (ii)	Management will prosecute those people that illegally utilise natural resources for commercial or other purposes in accordance with the legislation.
6.5 (i)	Develop a comprehensive Cultural Heritage Inventory and Management Plan for UNR in collaboration with SAHRA and Amafa. Institutional capacity will also be addressed by this plan.
6.6 (i)	Control or 'bench mark' areas within UNR will be identified where no extractive resource utilisation of indigenous species will take place.
6.6.1 (i)	Evaluate Resource Use in UNR in terms of EKZNW policies for the Evaluation of Extractive Resource Use. If possible, sustainable and feasible in terms of this guideline, develop a resource use management plan and implement.
6.9 (i)	Develop a prioritised UNR natural and cultural heritage research project list.
6.9 (ii)	Develop procedures that will ensure that all abiotic and biotic data collected are captured in managed databases and GIS data layers for interrogation by researchers and managers.
6.9 (iii)	Identify and develop reference library facilities and procedures to maintain hard and digital copies of all UNR related research work, all documents listed as IMP supporting documentation in Appendix 1 as well as any new supporting management

	documentation produced. Strict curation rules will apply and the ultimate responsibility for the curation of this library at UNR will be allocated to the most senior reserve management position and the Regional Co-ordinator: Ecological Advice at the Coastal Regional Office.
6.9.1 (i)	An appropriate monitoring and evaluation programme for each of the above components is to be developed for the Nature Reserve and implemented.
6.10 (i)	Develop and maintain an UNR Infrastructure database and map.
6.10 (ii)	Review the desirability and effectiveness of all present infrastructure associated with Nature Reserve with regard to: <ul style="list-style-type: none"> • Adequacy. • State of repair. • Existing maintenance plans and programs. • Visitor and staff use, requirements and values. • Financial. • Environmental impact (negative and positive). • Income generation. • Possibilities of outsourcing.
6.12.5 (i)	All management tracks will be evaluated for the suitability of their alignment and recommendations made for new vehicle roads and tracks, repair or closure (with rehabilitation measures) of existing ones.
6.10.10.1 (i)	Develop an integrated waste management plan for UNR.
6.10.10.1 (ii)	Develop, install and maintain effective standardized solid waste receptacles for UNR that are animal and baboon / monkey-proof.
6.10.10.2 (i)	All sewage systems in UNR will be investigated for legal compliance. A phased development plan to upgrade existing systems and septic tank / French drain systems will be put in place.
6.10.11 (i)	Develop a phased plan to install standardised (reliable and tested) water- and energy-saving devices throughout UNR as soon as practically possible.
6.10.12 (i)	Determine the requirement for helicopter landing pads on UNR. If required and approved, select site/s and maintain according to minimum aviation standards.
6.10.12 (i)	Management will maintain a secure entry controls system and maintain a high level of internal security in order that visitors and their belongings can be safe and secure.
6.10.12 (ii)	All Reserve staff must receive appropriate training regarding all health and safety aspect and must receive refresher course training as required on a regular basis.
7.1 (i)	The PAMC will undertake a five-yearly review of this IMP in 2013 to revise and amend the IMP for the following five years.
7.2 (i)	Convene a PAMC meeting annually in November to monitor, evaluate and report on progress in terms of this IMP, plan and, if necessary, recommend the re-prioritisation of management activities or amendments to the IMP. Ensure all resource needs are submitted when budgets are being prepared.
Socio-Economic Benefits The provision of socio-economic benefits (benefit flow) to the Reserve's neighbours and to contribute to the local economy and the efforts of conservation in a sustainable manner based on sound business principles (EKZN Business Plan)	
Other Action Projects supporting UNR Management Objective 2.	
3.13 (i)	Update the Sociological context and its importance to UNR.
3.14 (i)	Update the economic context and its importance for UNR.
6.1.1 (ii)	Initiate a resource economics study of the Nature Reserve to determine its economic value regarding the provision of ecosystem services and its contribution to the local and regional economy.
6.2.2 (i)	The Community Levy will continue to be collected for the development and upliftment of the local communities.
6.2.3 (i)	Training of members of the local community will continue to be practiced. Investigate other employment opportunities that will benefit the surrounding local communities of UNR.
6.2.7 (i)	Annually in March of each year arrange a public meeting to give feedback on

	progress, planned projects and encourage informal local community participation.
6.7 (iv)	Align marketing strategy with EKZNW organisational plan.
6.10.5 (ii)	Investigate [in consultation with SAHTOA (SA Hiking Trail Owners Association)] the potential for a hiking trail routes and day walks in UNR and make recommendations on professional hiking trail evaluation, design, construction, maintenance, accreditation, marketing, management as well as estimated revenue and expenditure. Implement if feasible.
Business The provision of appropriate ecotourism business opportunities in the natural and cultural environment based within the influence sphere of UNR	
Other Action Projects supporting UNR Management Objective 3.	
2.5 (i)	Obtain and review all formal and informal local agreements, leases, servitude arrangements <i>etc.</i> pertaining to UNR and document, update, maintain and monitor these appropriately authorised agreements. All informal agreements are to be formalised and approved by the Executive.
6.1.1 (i)	Develop a five-year Strategic Management Plan and Business Plan for UNR.
6.1.2 (i)	Investigate and develop an appropriate human resource structure and capacity of UNR with a view to improving effectiveness and efficiency in achieving UNR objectives and informing the Business Plan.
Partnerships The formation of functional partnerships to integrate the UNR with regional development plans and other initiatives which underwrite the vision of UNR	
Promote and ensure effective communication between the local communities and EKZNW through integrated, shared and co-operative working relationships.	
4.2 (i)	Implement EKZNW IEM Policy. Create awareness of or inform surrounding landowners on the IEM Process and legislation through fora.
4.2 (iii)	Participate in existing liason fora.
Participate as a key stakeholder in local environmental management initiatives.	
4.2 (ii)	Participate as a key stakeholder in EIA applications for developments near the reserve that may impact on the protected area.
Other Action Projects supporting UNR Management Objective 4.	
2.1.3 (i)	Update and compile a list of all other service providers
2.3 (i)	Management in collaboration with other relevant EKZNW officials, will be tasked with active participation in the review processes of the municipal Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) in order to ensure an effective buffer zone surrounding UNR through an alignment of appropriate land use adjacent to the Nature Reserve.
6.2 (i)	EKZNW will continue to work collaboratively with landowners and surrounding communities to improve conservation management of UNR for the benefit of all.
6.2.1 (i)	Establish a Local Board for the Nature Reserve.
6.2.6 (i)	Establish effective provincial Transfrontier collaborative structures for the UNR with the Eastern Cape.
6.7 (i)	Cognisant of the UNR IMP and CDP policy guidelines, develop UNR Eco-cultural Tourism Development and Marketing Strategy that addresses: <ul style="list-style-type: none"> the attainment of professional tourism service delivery standards. branding and marketing. linkages with other regional tourist initiatives. public / private partnerships. cultural heritage tourism. visitor awareness, orientation and interpretation.
6.7 (ii)	Develop and communicate formal procedures for local tourism user groups.
6.7 (iii)	Develop and implement a visitor management plan. Undertake analysis of available

	recreational facilities and identify opportunities to improve these.
6.8 (v)	Develop an interpretation programme in a standard format for the Nature Reserve.
6.11.3 (i)	Develop a Concept Development Plan and align with Municipal Planning.

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APPENDIX 1

List of References for Unpublished Supporting Documentation UNR - Integrated Management Plan 2009 - 2013

Copies available from:

Coastal Regional Office of Ezemvelo KZN Wildlife, Private Bag X3, Congella, 4013
Contact person: Ecological Advice Coordinator, Coastal Region

Item

1. EKZNW Corporate Strategic Plan and Performance Plan for 2009-2014.
2. EKZNW Corporate Policies (Norms & Standards) listed in **Table** below.
3. EKZNW Biodiversity Database Checklists for UNR.
4. Amafa / EKZNW Co-operative Conservation Management of Cultural Heritage Agreement (signed July 2005).
5. List of local agreements, leases and other servitude arrangements pertaining to UNR.
6. Guidelines for the Registration and Administration of Research Projects Undertaken by or through Ezemvelo KZN Wildlife (August 2002).
7. Public Participation Report for Umtamvuna Nature Reserve.

APPENDIX 2

Appendix 2 below lists the EKZNW Corporate Policies (Norms & Standards) referenced from intranet⁴ that are most relevant to EKZNW PA management. It is, however, the responsibility of all management and other personnel associated with the management of protected areas to ensure that they familiarise themselves and comply with the most recent versions of all EKZNW Board Approved Policies.

EKZNW CORPORATE POLICIES (NORMS & STANDARDS)	
<u>Policy File No.</u>	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 EKZNW.
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.
<u>Policy File No.</u>	INTERNAL AUDIT
C 5	• Management Control
BIODIVERSITY CONSERVATION OPERATIONS	
1. NATURAL RESOURCE SUSTAINABILITY	
<u>Policy File No.</u>	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.
<u>Policy File No.</u>	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.
<u>Policy File No.</u>	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	

⁴ www.kznwildlife.com/intranet (Accessed 31 March 2009)

<u>Policy File No.</u>	Strategic Applications
D 2.1	<ul style="list-style-type: none"> • Involvement of the KwaZulu-Natal Nature Conservation Board in Project 8 of the MAB (Man and Biosphere) Programme.
<u>Policy File No.</u>	Conservation Management: Protected Area Management
D 2.2	<ul style="list-style-type: none"> • Management of Wilderness Areas.
D 2.3	<ul style="list-style-type: none"> • Protected Area Development.
D 2.4	<ul style="list-style-type: none"> • Prohibition of Works and Servitudes in Board Areas.
D 2.5	<ul style="list-style-type: none"> • Zonation and Regulations for the control of off-road vehicles on beaches controlled by the Board.
D 2.6	<ul style="list-style-type: none"> • Quarries in KZN Protected Areas.
D 2.7	<ul style="list-style-type: none"> • Re-establishment and Management of Vegetation on Development Sites in the Ezemvelo KZN Wildlife Protected Areas.
D 2.8	<ul style="list-style-type: none"> • Ecotourism and Protected Areas.
D 2.9	<ul style="list-style-type: none"> • Solid Waste Management within Protected Areas.
D 2.10	<ul style="list-style-type: none"> • State Security Service Activities within Board Areas.
D 2.11	<ul style="list-style-type: none"> • Shark Nets in or bordering KwaZulu-Natal Nature Conservation Board Controlled Areas.
<u>Policy File No.</u>	Integrated Environmental Management
D 2.12	<ul style="list-style-type: none"> • Integrated Environmental Management - incorporating the procedure for the assessment of the impact of proposed development projects on nature conservation concerns.
D 2.13	<ul style="list-style-type: none"> • Precautionary Principle.
D 2.14	<ul style="list-style-type: none"> • Shark Net Installations.
D 2.15	<ul style="list-style-type: none"> • Bioprospecting in KwaZulu-Natal.
D 2.17	<ul style="list-style-type: none"> • Use of Pesticides by the Ezemvelo KZN Wildlife: Safety to Humans and the Environment.
D 2.18	<ul style="list-style-type: none"> • Interference with the Mouth of a Lagoon or River (Breaching).
<u>Policy File No.</u>	Ex Situ Wild Animal Management
D 2.21	<ul style="list-style-type: none"> • Re-establishment of Terrestrial Mammals in Board Areas.
D 2.22	<ul style="list-style-type: none"> • Translocation of Animals.
D 2.25	<ul style="list-style-type: none"> • Elephant Introductions and Elephant in Enclosures.
D 2.27	<ul style="list-style-type: none"> • Introduction and Keeping of Large Predators in Enclosures in KZN.
D 2.28	<ul style="list-style-type: none"> • Use of Narcotic Drugs.
D 2.29	<ul style="list-style-type: none"> • Falconry.
<u>Policy File No.</u>	Human Animal Conflict - Inside and Outside Protected Areas
D 2.30	<ul style="list-style-type: none"> • Disposal of Leopard from Ezemvelo KZN Wildlife Protected Areas.
D 2.31	<ul style="list-style-type: none"> • Problem Animal Control.
D 2.32	<ul style="list-style-type: none"> • Compensation claims in respect of damage caused by Lion, Cheetah, Wild Dog and Elephant to Stock and Crops.
D 2.33	<ul style="list-style-type: none"> • 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.
<u>Policy File No.</u>	Environmental Awareness

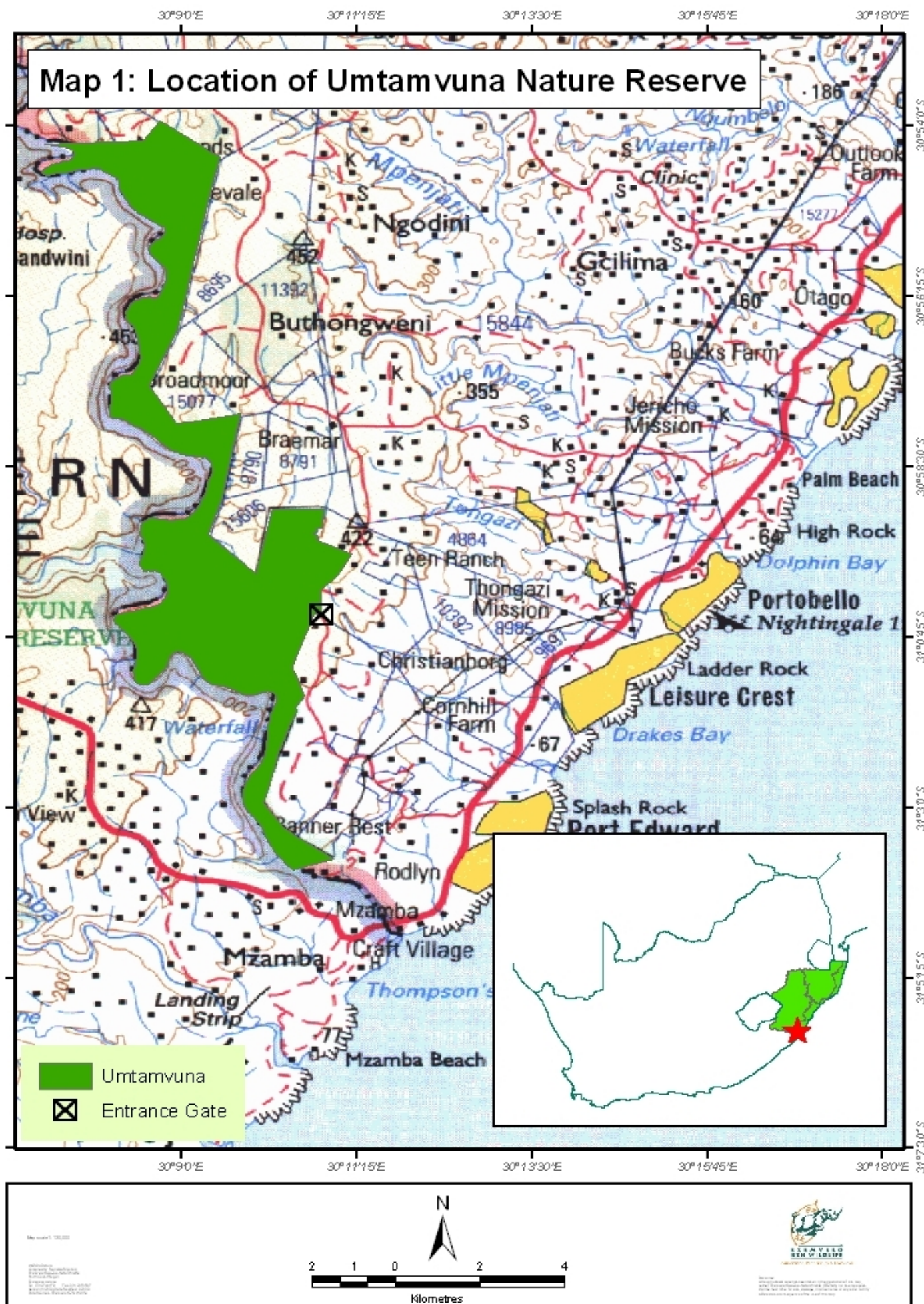
D 2.34	• Environmental Education Policy.
	3. BIODIVERSITY PROTECTION
<u>Policy File No.</u>	Co-management
D 3.1	• Supply of Game to Conservancies, Community Conservation Areas and Biosphere Reserves in KwaZulu-Natal
D 3.2	• Establishment and Management of Community Conservation Reserves (CCR)
D 3.4	• 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
<u>Policy File No.</u>	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.
<u>Policy File No.</u>	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.
<u>Policy File No.</u>	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.

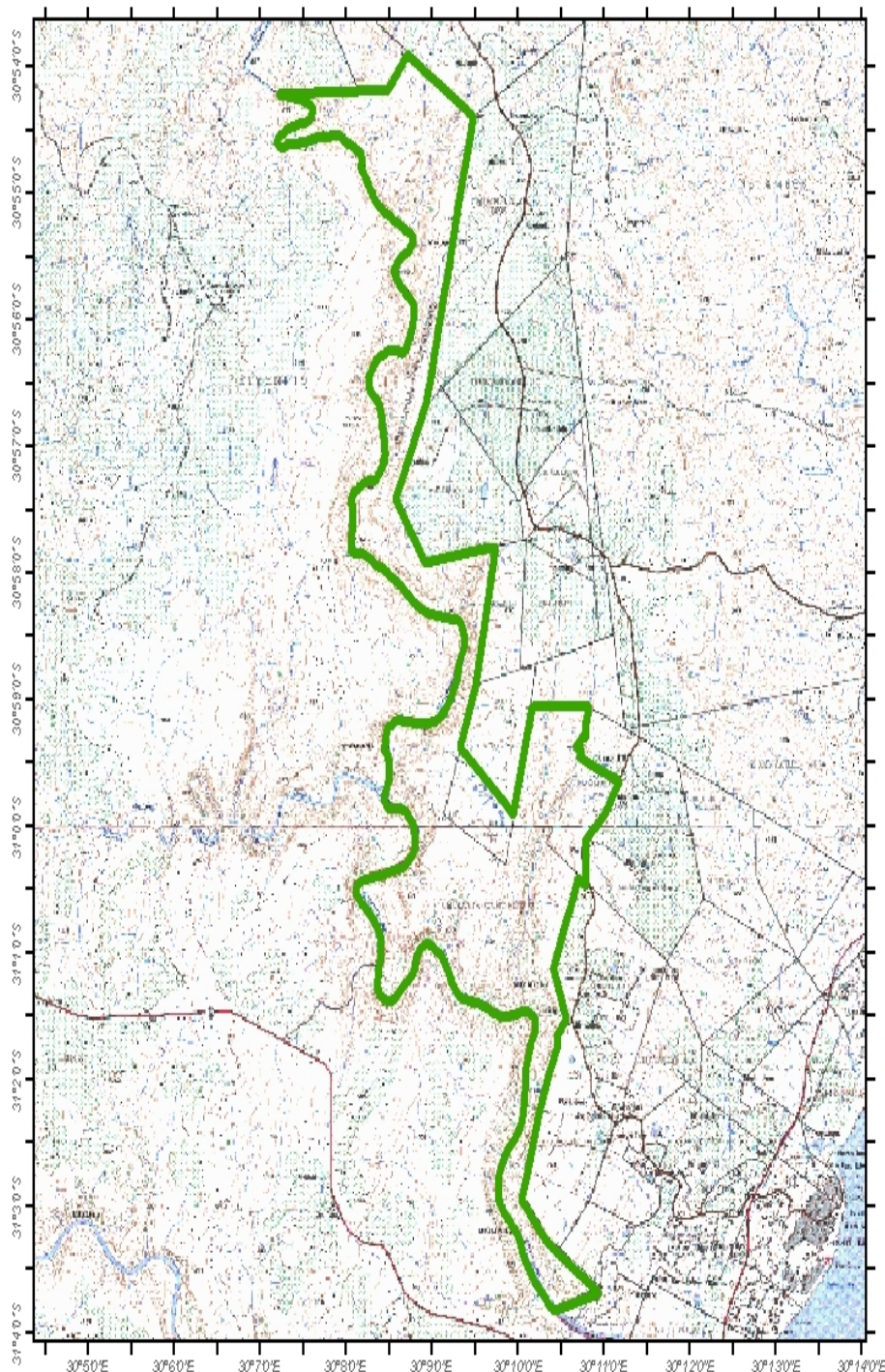
APPENDIX 3 – ZONATION DESCRIPTIONS

CATEGORY	DESCRIPTION OF CRITERIA TO BE USED FOR ZONATION	SETTING DESCRIPTIONS (AS FROM ROS HANDBOOK)
Semi-Primitive Non-motorised	<p>Closely related to the above zone, but usage of formalized trails at a high intensity – concreting/rock-packing of trails</p> <p>Natural environment experience, non-motorised use, usually a buffer between Wilderness and semi-primitive wilderness/roaded natural areas</p> <p>Visual and audio impact from outside, at a short distance (< 5km)</p> <p>May be hiking huts or other types of low-scale accommodation, possible field ranger outposts.</p>	<p>Area is characterised by a predominantly natural or natural-appearing environment of moderate to large size, interaction between users is low, but there is often evidence of other users. The area is managed such that minimum on-site controls and restrictions may be present, but are subtle. Motorised use is not permitted.</p>
Semi-Primitive Motorised	<p>4x4 trails and their area of impact (audio and visual)</p> <p>Visitor and management tracks and their zone of visual and audio impact (GIS to be used to determine exact range of impact, hence an initial distance of 100m other side has been set)</p> <p>Rustic accommodation, or low-level, low intensity tourism nodes (no bigger than 10 – 20 beds).</p>	<p>Area is characterised by predominantly natural or natural-appearing environment of moderate to large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are suitable. Motorised use is allowed.</p>
Rural	<p>A rural recreational node/area, rather than as a nature-based experience. Resort type development rather than a nature-based tourism facility.</p>	<p>Area is characterised by a substantially modified natural environment. Resource modifications and utilisation practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident and the interaction between users is often moderate-high. A number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate densities are provided far away from developed sites. Facilities for intensified motorized use and parking are available.</p>

Map 1 – Location of UNR



Map 2a – Topography of UNR



Topographic Map : Map 2a Umtamvuna Nature Reserve



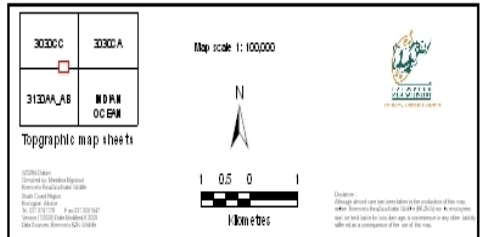
Proclaimed boundary (1971)

Reserve Extents

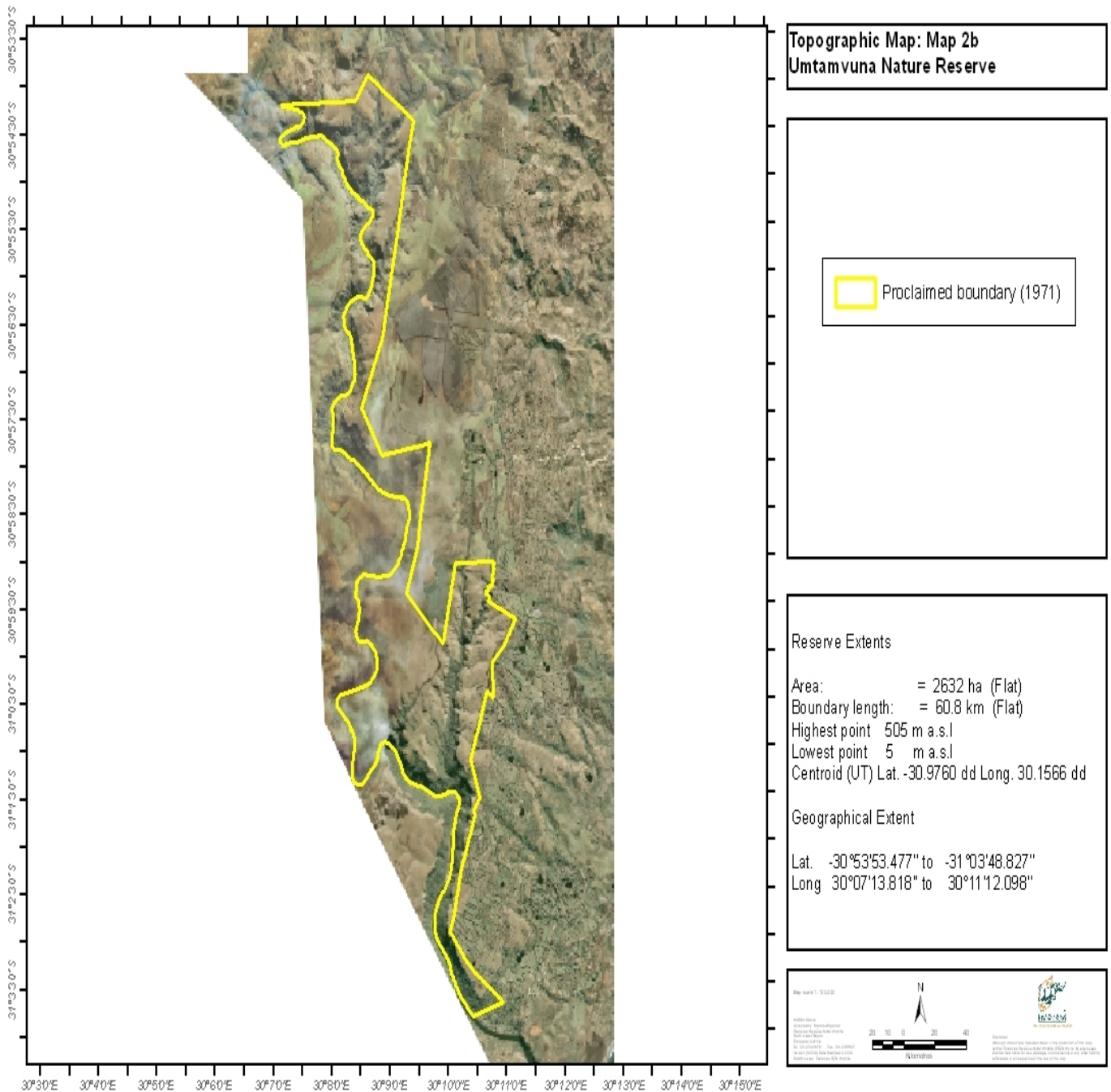
Area: = 2632 ha (Flat)
 Boundary length: = 60.8 km (Flat)
 Highest point 505 m a.s.l
 Lowest point 5 m a.s.l
 Centroid (UT) Lat. -30.9760 dd Long. 30.1566 dd

Geographical Extent

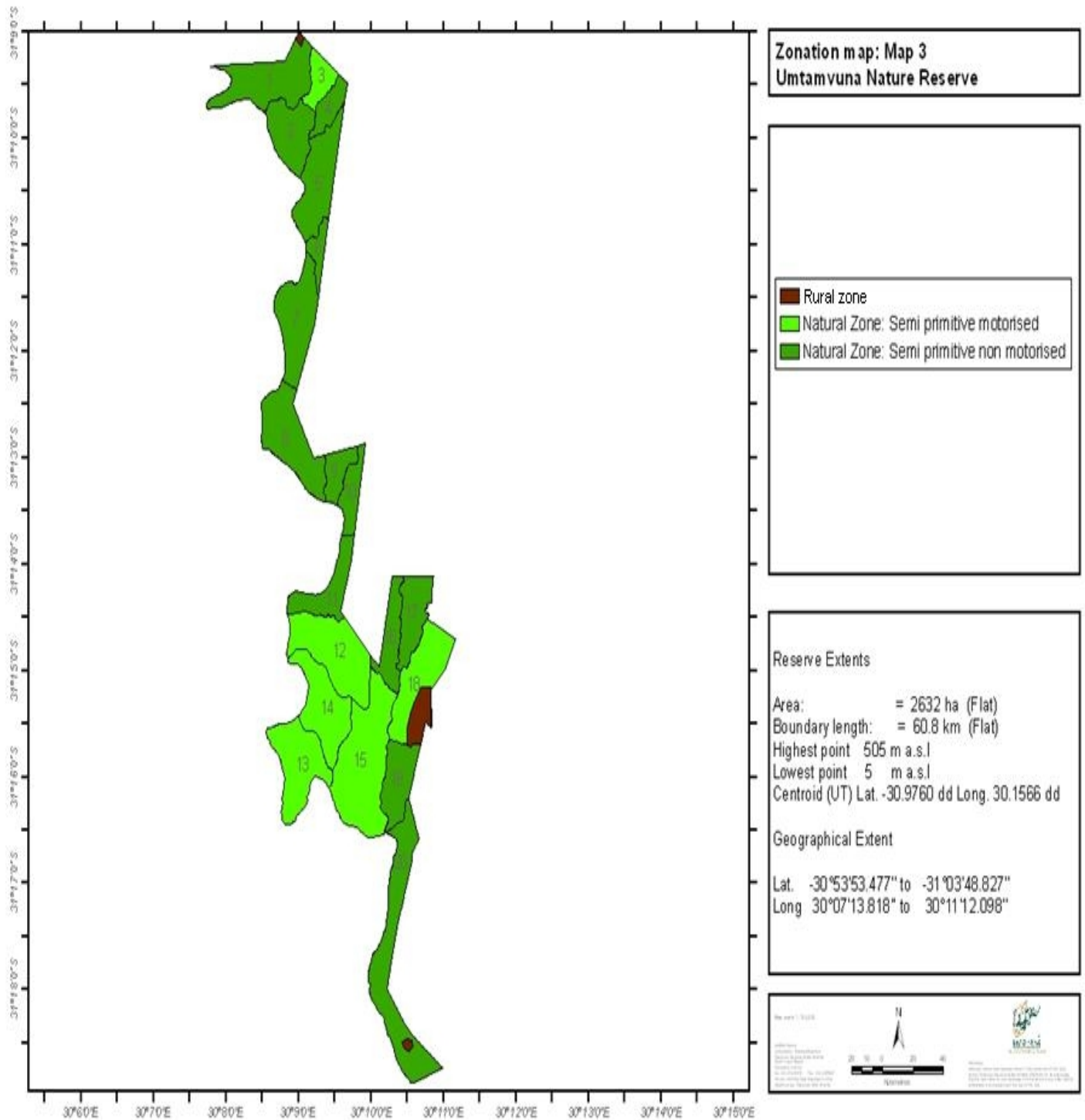
Lat. -30°53'53.477" to -31°03'48.827"
 Long 30°07'13.818" to 30°11'12.098"



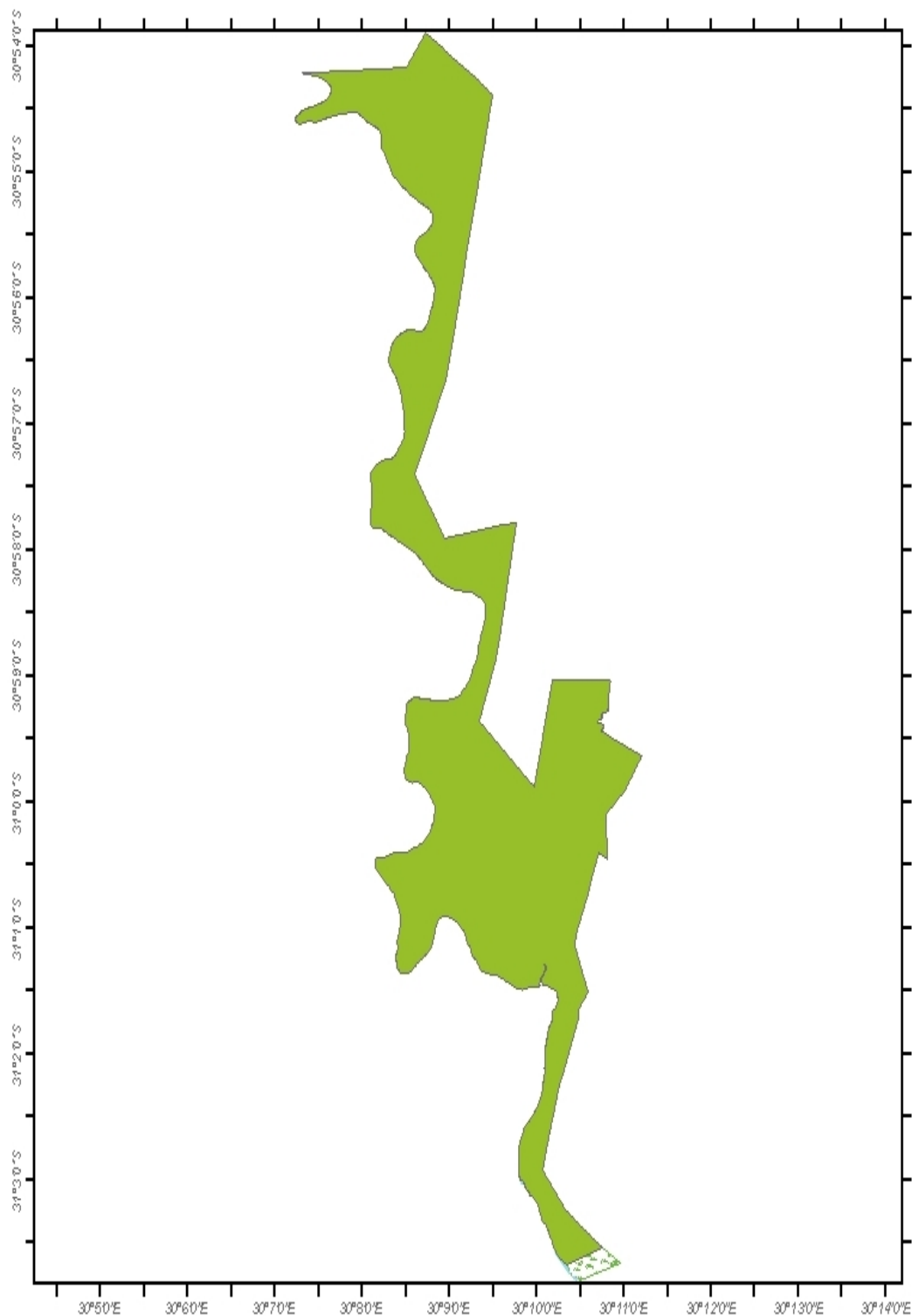
Map 2b – Topography of UNR



Map 3 – Zonation of UNR



Map 4a – Vegetation of UNR



Vegetation (2009): Map 4a
Umtamvuna Nature Reserve

- Pondoland-Ugu Sandstone Coastal Sourveld
- South Coast Grassland
- Subtropical Coastal Lagoons

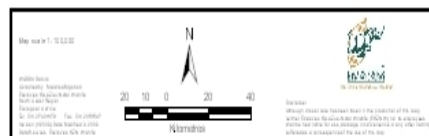
Vegetation type	Hectares	Perimeter
South Coast Grassland	24.1	2.3
Subtropical Coastal Lagoons	2.0	2.0
Pondoland-Ugu Sandstone Coastal Sourveld	2573.4	60.0

Reserve Extents

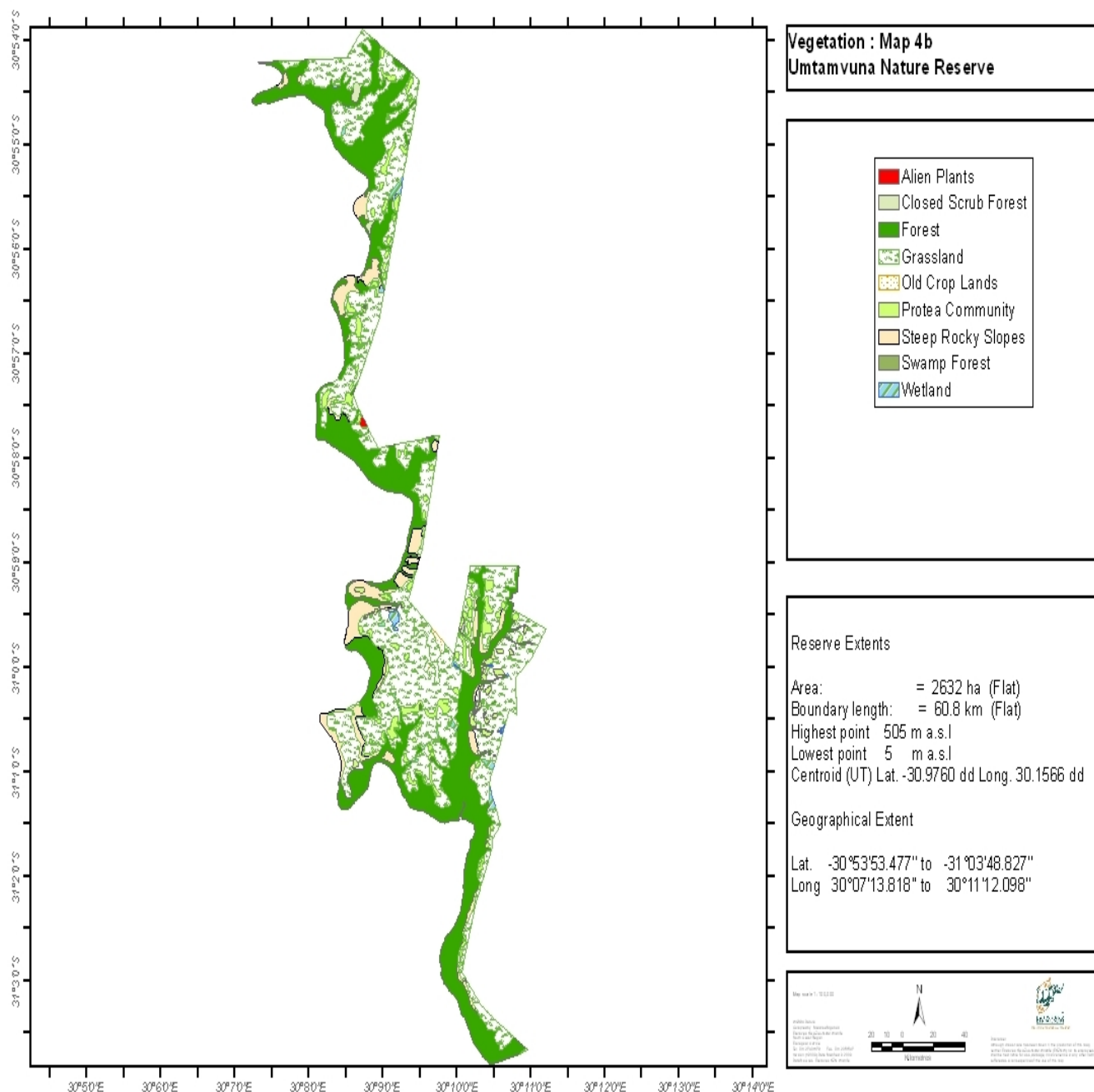
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 Centroid (UT) Lat. -30.9760 dd Long. 30.1566 dd

Geographical Extent

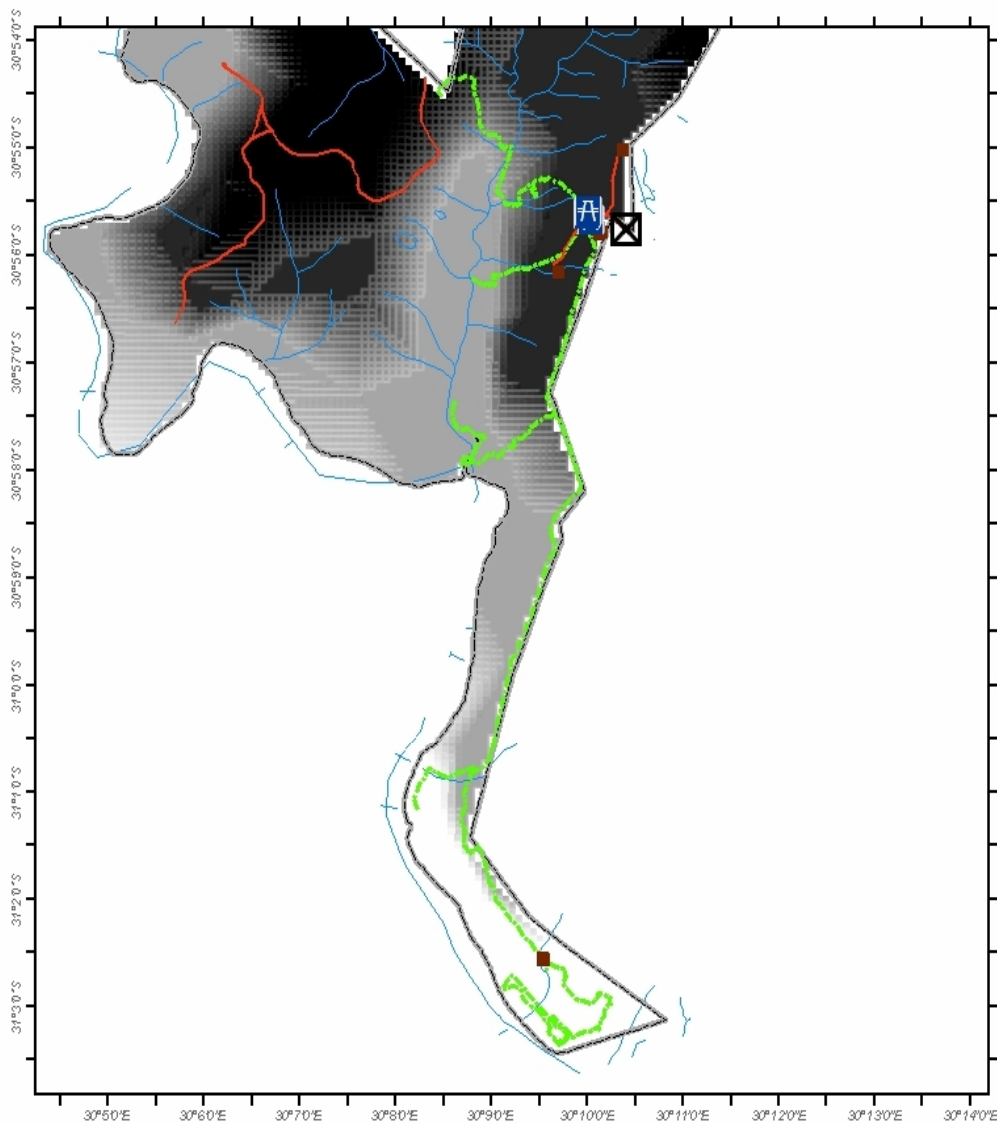
Lat. -30°53'53.477" to -31°03'48.827"
 Long 30°07'13.818" to 30°11'12.098"



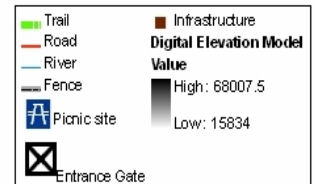
Map 4b – Vegetation of UNR



Map 5 – Trails of UNR



Trails Map Umtamvuna Nature Reserve



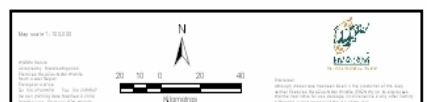
Management block	Perimeter	Hectares	Management block	Perimeter	Hectares
1	83 43.5	180.0	11	5917.9	90.0
2	4591.6	1114.4	12	6926.2	203.2
3	3369.1	49.0	13	6139.5	161.2
4	3316.4	46.5	14	6401.3	154.9
5	6470.5	148.4	15	6605.8	259.7
6	3359.8	31.8	16	5719.5	80.4
7	5913.7	149.8	17	4337.9	93.8
8	6385.4	167.8	18	6651.7	158.6
9	3343.5	51.2	19	4610.5	100.0
10	4102.8	55.8	20	12476.8	244.5

Reserve Extents

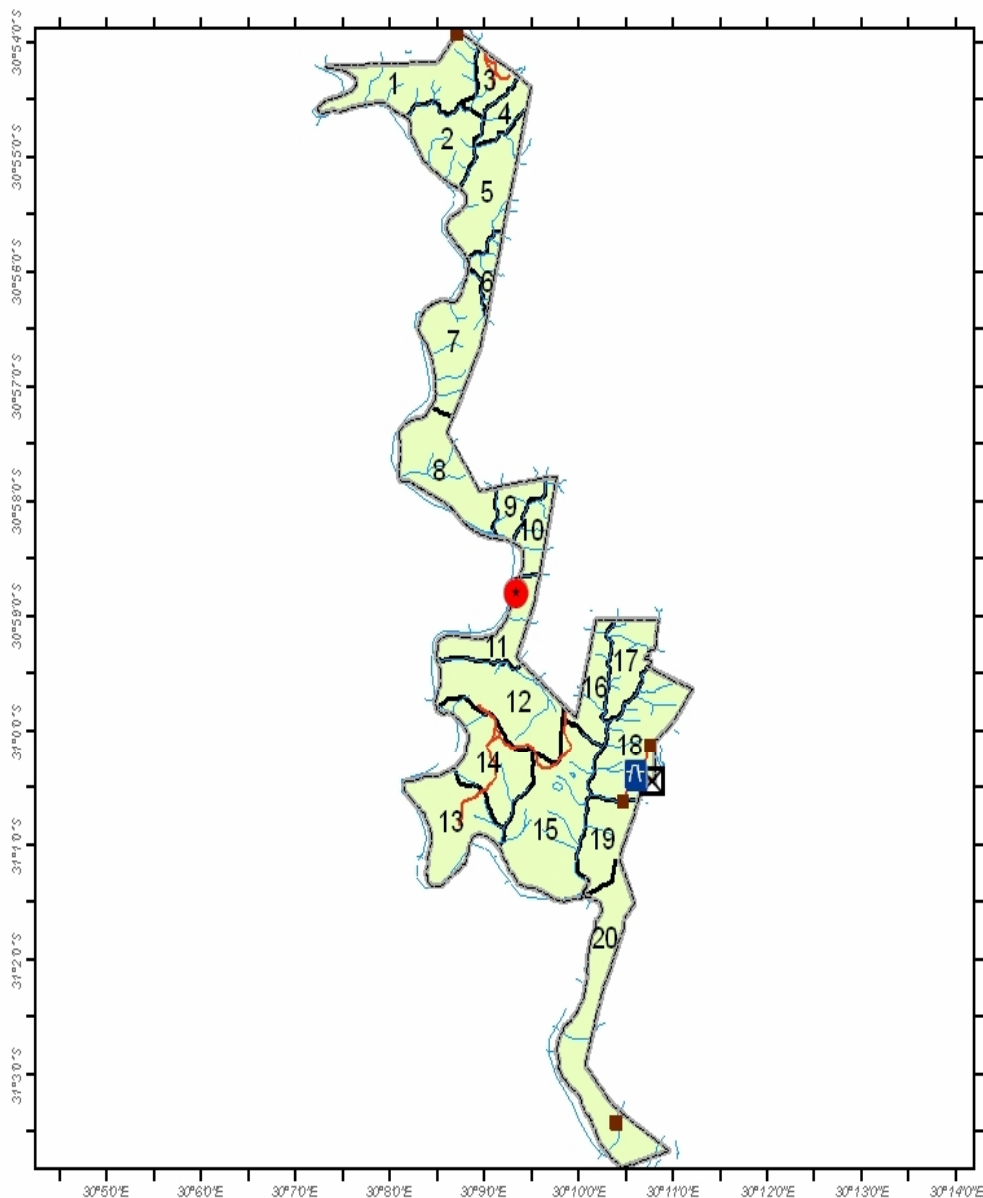
Area: = 2632 ha (Flat)
 Boundary length: = 60.8 km (Flat)
 Highest point 505 m a.s.l.
 Lowest point 5 m a.s.l.
 Centroid (UT) Lat. -30.9760 dd Long. 30.1566 dd

Geographical Extent

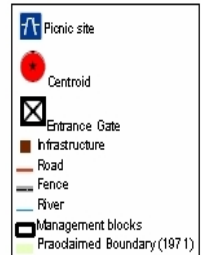
Lat. -30°53'53.477" to -31°03'48.827"
 Long 30°07'13.818" to 30°11'12.098"



Map 6 – Infrastructure of UNR



**Infrastructure (Management Blocks)
Umtamvuna Nature Reserve**



Management block	Perimeter	Hectares	Management block	Perimeter	Hectares
1	8343.5	180.0	11	5917.9	92.0
2	4591.5	114.4	12	6925.2	203.2
3	3368.1	49.0	13	6139.5	161.2
4	3314.4	46.5	14	6401.3	154.9
5	6470.5	148.4	15	8605.8	289.7
6	3359.8	31.8	16	5719.8	80.4
7	5913.7	149.8	17	4837.9	93.8
8	6366.4	167.6	18	6651.7	188.6
9	3343.5	51.2	19	4610.5	100.0
10	4102.8	55.8	20	12476.8	244.5

Reserve Extents

Area: = 2632 ha (Flat)
 Boundary length: = 60.8 km (Flat)
 Highest point 505 m a.s.l
 Lowest point 5 m a.s.l
 Centroid (UT) Lat. -30.9760 dd Long. 30.1566 dd

Geographical Extent

Lat. -30°53'53.477" to -31°03'48.827"
 Long 30°07'13.818" to 30°11'12.098"

