Kiepersol Protected Environment

Management Plan

Prepared by the

Endangered Wildlife Trust

KwaZulu-Natal, 2025

AUTHORISATION

This management plan for the Kiepersol Protected Environment is approved:

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Abbreviations

DFFE	Department of Forestry, Fisheries and the Environment
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMP	Environmental Management Plan
FPA	Fire Protection Association in terms of the National Veld and Forestry Fire Act (No. 1 of 1998)
GIS	Geographic Information System
IDP	Municipal Integrated Development Plan
IUCN	International Union of the Conservation of Nature
MEC	Member of the Executive Council
MoU	Memorandum of Understanding
NEMA	National Environmental Management Act
NPAES	National Protected Area Expansion Strategy
NSBA	National Spatial Biodiversity Assessment
PA	Protected Area
SDF	Municipal Spatial Development Framework
SMME	Small, Micro and Medium Enterprises
SWOT	Strengths, Weaknesses, Opportunities and Threats analysis
UNESCO	United Nations Educational, Scientific and Cultural Organization

1. Background

1.1. Purpose of the plan

Management plans for Biodiversity Stewardship sites are important for the development and operation of these sites and are strategic documents that help with the functioning of the sites.

The purpose of the management plan is to:

- Provide the primary strategic tool for the management of a protected environment, informing the need for specific programmes and operational procedures.
- Provide for capacity building, future thinking and continuity of management.
- Enable the landowner to develop and manage Kiepersol Protected Environment in such a way that the values and purpose for which is has been established are protected.

1.2. Structure of the plan

The management plan for the Kiepersol Protected Environment is structured as follows:

Section 1	Provides the introduction and background to the management plan and the Kiepersol Protected Environment.
Section 2	Establishes and context of the protected area, providing the basis for the strategic and operational management frameworks that follow.
Section 3	Sets out the vision and objectives for the biodiversity stewardship site.
Section 4	Sets out the zonation of the biodiversity size, outlining the land uses in particular zones.
Section 5	Describes the administrative structure that has been established to assess in the management of the Kiepersol Protected Environment.
Section 6	Sets out the management targets that must be achieved in managing the nature reserve.
Section 7	Sets out the monitoring measures required to determine if management targets are being met.
Section 8	Describes the components that must be included in the annual plan of operation.

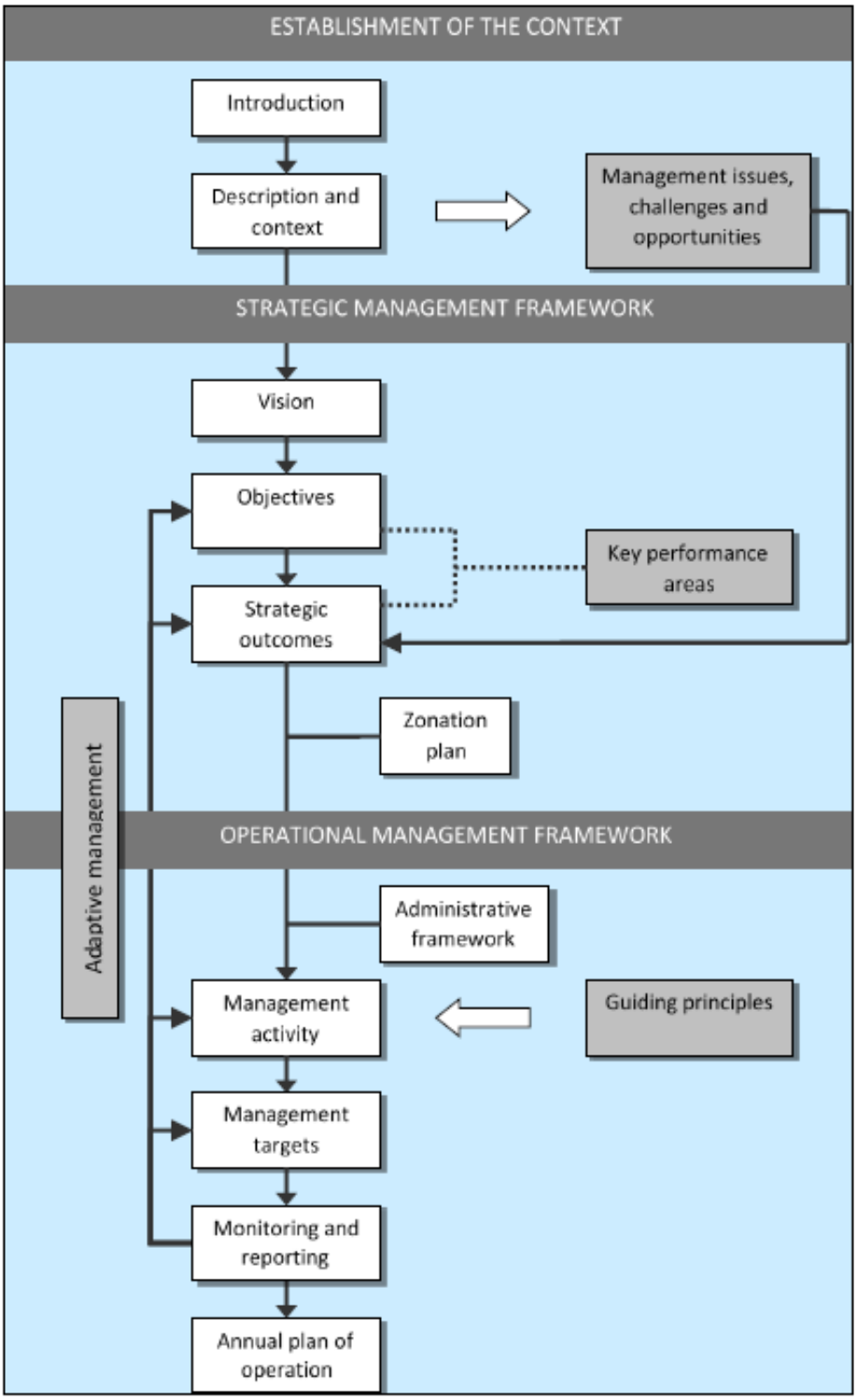

Figure 1. Structure of the management plan

1.3. Introduction

The Kiepersol Protected Environment is made of 16 portions of farms in the north-western part of KwaZulu-Natal and is 5 166 hectares in size. Two portions share a border with the Free State province.

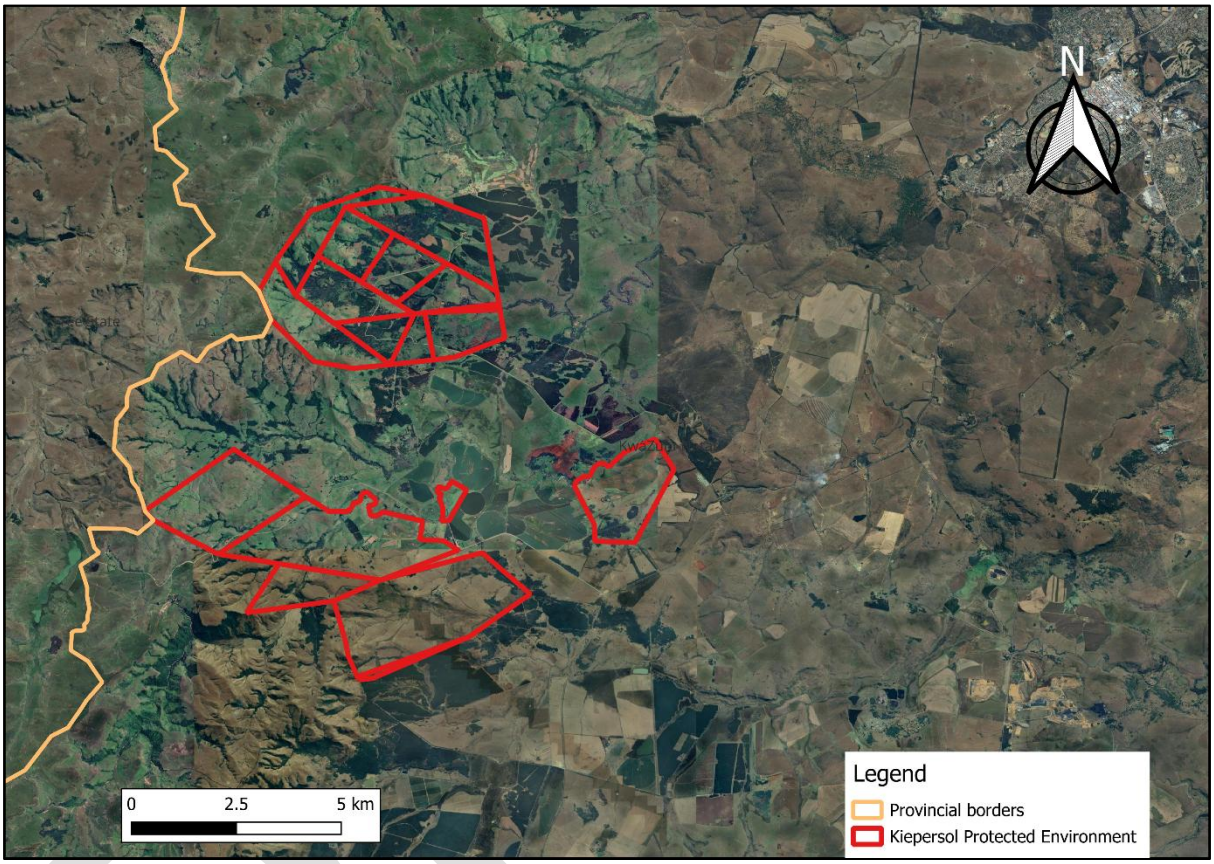

Figure 2. Satellite view of the Kiepersol Protected Environment

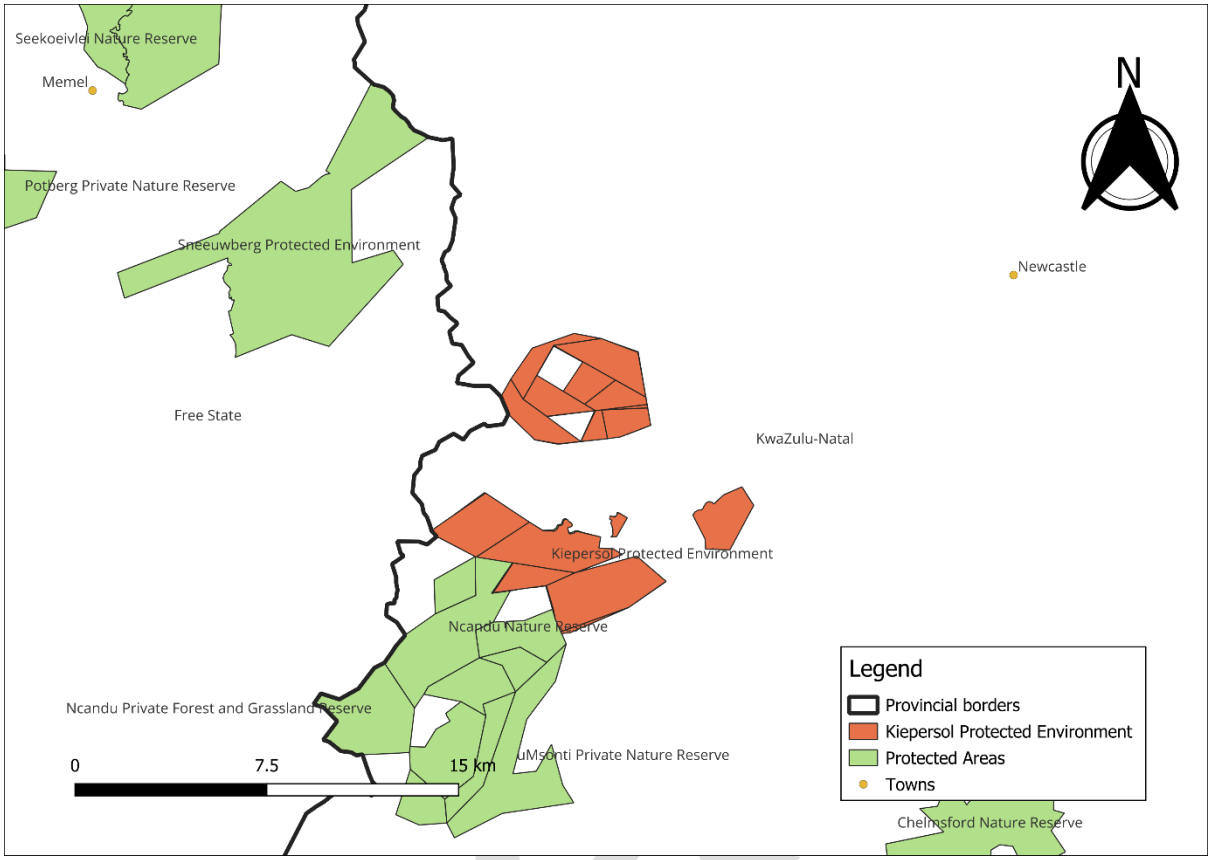

Figure 3. Regional location of the Kiepersol Protected Environment

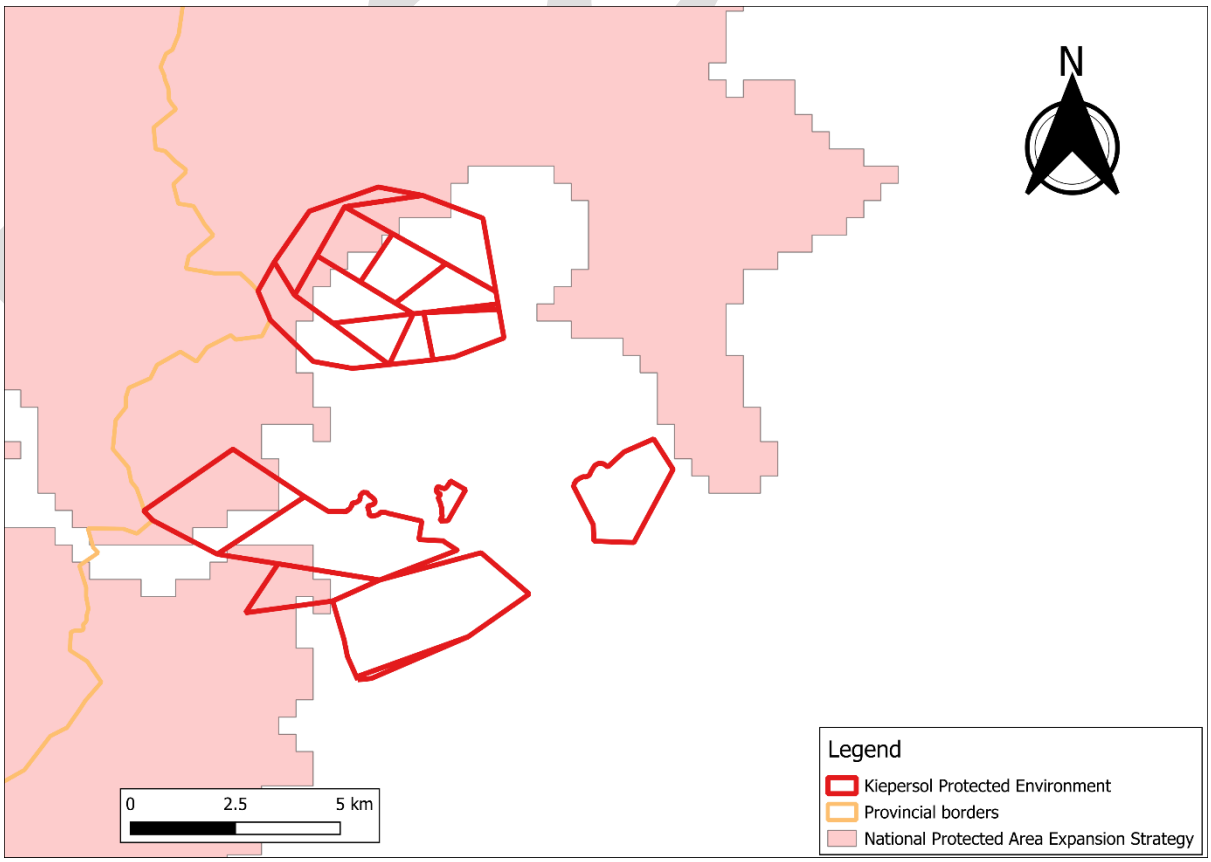

Figure 4. Location within the priority areas of KZN

In accordance with the Local Government: Municipal Demarcation Act (Act No. 27 of 1998) and the Local Government: Municipal Structures Act (Act No. 117 of 1998), the Kiepersol Protected Environment has been demarcated into one district municipality and one local municipality namely:

- Amajuba District Municipality
- Newcastle Local Municipality

1.4. The values of the Kiepersol Protected Environment

The values of a place are those remarkable attributes that exemplify that led to it being identified as a priority for biodiversity conservation. The values are important in planning and management, as they are the aspect of the place that must be protected.

Table 1. The Values of Kiepersol Protected Environment

Natural Values	The high irreplaceability levels of the area are associated with its large, relatively intact and untransformed grassland that contain a number of threatened and endemic plant, bird and mammal species. Only 15.5% of Eastern Mistbelt Forest is protected (66.5% target, endangered), and 1% of Northern KZN Moist Grassland is protected (24% target, vulnerable). In addition to the spiny crag lizard (*Pseudocordylus spinosus*), which is restricted within KZN.
Ecosystem service values	The following key ecosystem services were identified during the site assessment (scores out of 5) • Complete vegetation cover • No soil erosion • Low levels of alien vegetation infestation and only in small areas • High species diversity • Large and well linked to surrounding habitats • Other similar habitats in good condition within 5km
Socio-economic values	• The properties are an important part of the catchment. It is therefore important for water provision • The area plays a role in regulating the flow of water though the grasslands and wetlands • The site provides pollination services due to its size, habitat heterogeneity, good condition and connectedness to other natural areas. • The site also provides pest and disease control, particularly due to the presence of scavengers. • The site has a very high potential for low impact tourism development.
Scenic values	• Grasslands, forest patches and mountainous areas have high scenic values across a variety of ecosystems and veld types as well as landscapes.

Cultural and historic values	• No information available
Scientific, research and educational values	• Research opportunities are available such as the identification of plant species such as orchids.

Consistent with Section 17 of the Protected Areas Act (Act No. 57 of 2003), the purpose of Kiepersol Protected Environment is to:

- Conserve the biodiversity of the area and the natural habitat.
- Share the natural beauty of the area with nature-based tourism.
- Manage grassland resources through appropriate veld burning and sustainable grazing in selected areas.

Features that drive the high irreplaceability values that are important for conservation:

- Eastern Mistbelt Forest
- Northern KZN Moist Grasslands
- *Geronticus calvus* (Southern Bald Ibis)
- *Sagittarius serpentarius* (Secretarybird)
- *Neotis denhami* (Denham's Bustard)
- *Balearica regulorum* (Grey Crowned Crane)
- *Eupodotis senegalensis* (White-bellied Korhaan)
- *Tyto capensis* (Grass Owl)
- *Circus ranivorus* (African Marsh Harrier)
- *Sylvia nigricapillus* (Bush Blackcap)
- *Clonia lalandei* (Lelande's Black-winged Clonia)
- *Doratogonus septentrionalis* (Northern black millipede)
- *Ourebia ourebi* (Oribi)
- *Chrysospalax villosus* (Rough-haired Golden Mole)
- *Crocidura maquassiensis* (Makwassie Musk Shrew)
- *Hydrictus maculicollis* (Spotted-necked Otter)

1.5. Protection of the values

The protected area's values that underlie the functioning of the ecosystem and the protection of rare and threatened species, will be given the highest degree of protection to ensure the persistence of these systems unaltered by human activity.

1.6. Ecosystem-based management

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

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

1.7. Adaptive management

The preparation of this management plan has been undertaken based on the guiding principles of adaptive management, which is a structured, interactive process in which decisions are made using the best available information, with the aim of obtaining better information through monitoring of performance (Figure 5). Decision making is aimed at achieving the best outcome based on the current understanding and accruing the information needed to improve the future management. Adaptive management can lead to revision of a part or if necessary the whole management plan.

Adaptive management enables landowners and managers to:

- Learn from experience.
- Take account of, and respond to, changing factors that affect the biodiversity stewardship site.
- Develop or refine management processes.
- Adopt best practices and new innovations in biodiversity conservation management.
- Demonstrate that management is appropriate and effective.

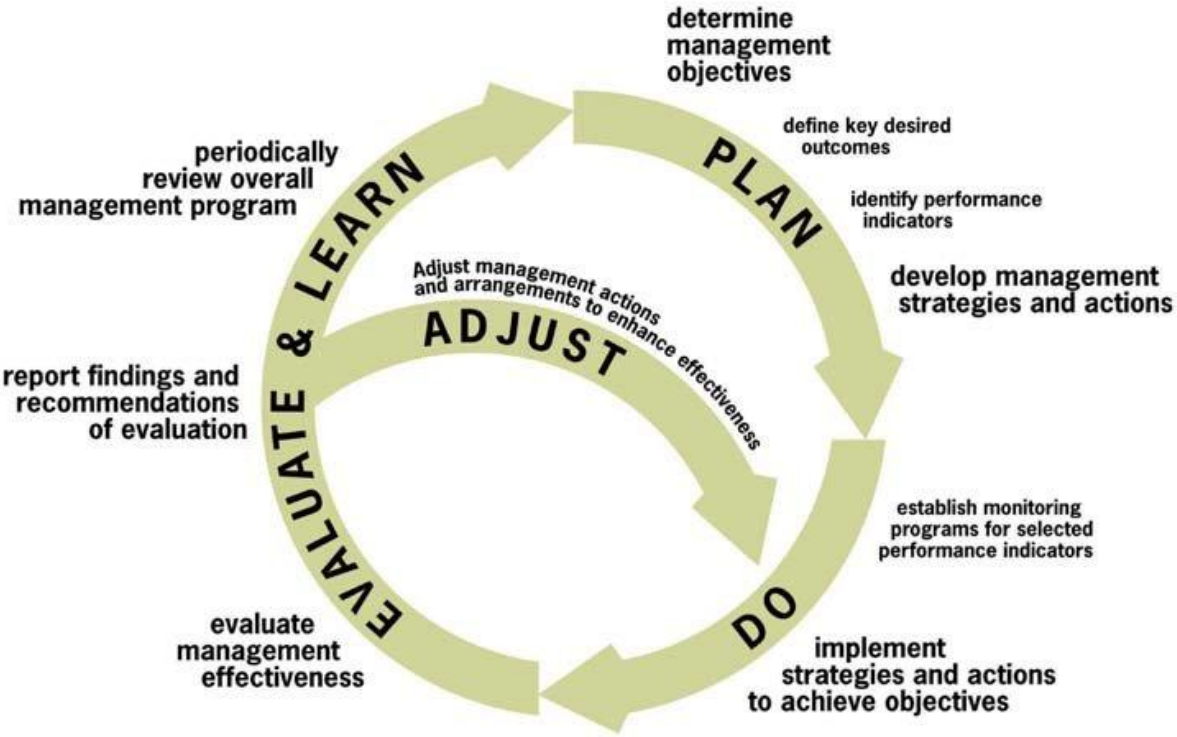

Figure 5. The Adaptive Management Cycle (Pantus *et al.* 2008)

2. Description of Kiepersol Protected Environment and its context

2.1.1. The legal context for the management of Kiepersol Protected Environment

There is a large body of legislation that is relevant to the management of the Kiepersol Protected Environment, but the primary legislation guiding the management of protected areas is the National Environmental Management: Protected Areas Act (Act No. 57 of 2003). The Protected Areas Act establishes the legal basis for the creation and administration of protected areas in South Africa, as its objectives include provisions "*for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its nature landscapes*". The act sets out the mechanisms for the declaration of protected areas and the requirements for their management.

2.1.2. Declaration status of the Kiepersol Protected Environment

The first phase of the Kiepersol Protected Environment was declared on 19 October 2023 that is made up of 14 portions and four ownership agreements.
The intent to declare the phase 2 section comprising of two portions was published on 26 December 2024. The total area of the Kiepersol Protected Environment is 5 166 hectares (4 317 hectares in phase 1 and 849 hectares in phase 2). The one portion belongs to an owner from the first phase and the second portion is an additional landowner.

2.1.3. Servitude register

No servitudes are registered on the properties.

2.1.4. Invasive species control in terms of the Biodiversity Act

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

2.2. Ecological Context of Kiepersol Protected Environment

2.2.1. Climate and Weather

The Kiepersol Protected Environment is located in the Newcastle area that is a summer rainfall region, with most of the rain falling in November to March. The protected area lies close to the escarpment, which is an area that receives significant orographic precipitation. Records from the Amajuba District Municipality show the Kiepersol Protected Environment to fall within the area that receives 900 to 1100mm annual rainfall.

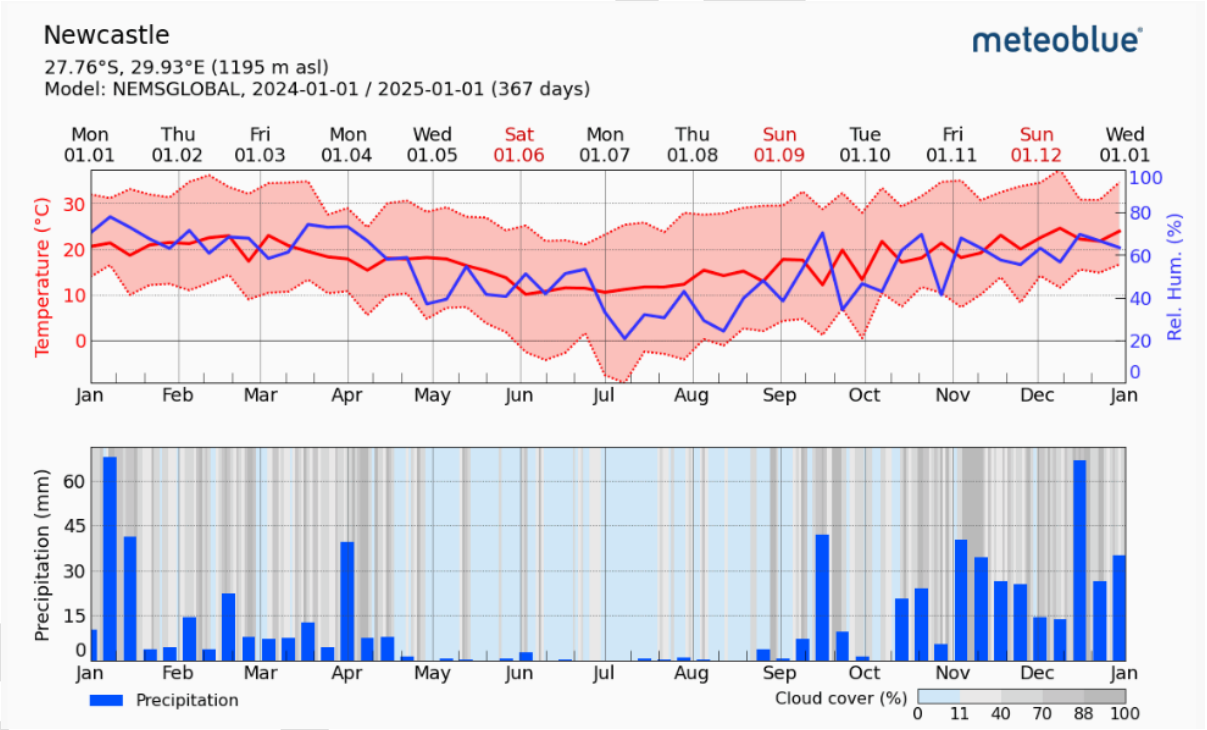

Figure 6. Weather data for the Newcastle region (Meteoblue 2025)

The mean annual temperature of Newcastle in 17.8°C and the mean annual minimum and maximum temperatures for Newcastle are 16.3°C and 29.1°C for summer (January) and 2.8°C and 20.7° for winter (July).
Frost occurs between April and September for 90 to 150 days during the year and snowfalls have been recorded. Southerly and northerly to north-westerly winds prevail in the area.

2.2.2. Topography

The Kiepersol Protected Environment lies on the Eastern Drakensberg Escarment of South Africa and in the Low Berg Escarpment with altitudes ranging from 1 363 m to 1 916 m.

The topography is rugged and the escarpment has numerous kloofs and gorges – many of which provide a location for evergreen forests known as the Eastern Mistbelt Forest (endangered). The topography includes steep and rough terrain together with streams in the kloofs and surrounded by forests.
The main watershed contained within the reserve is east facing, but the area has a number of spurs that face northeast and southwest.

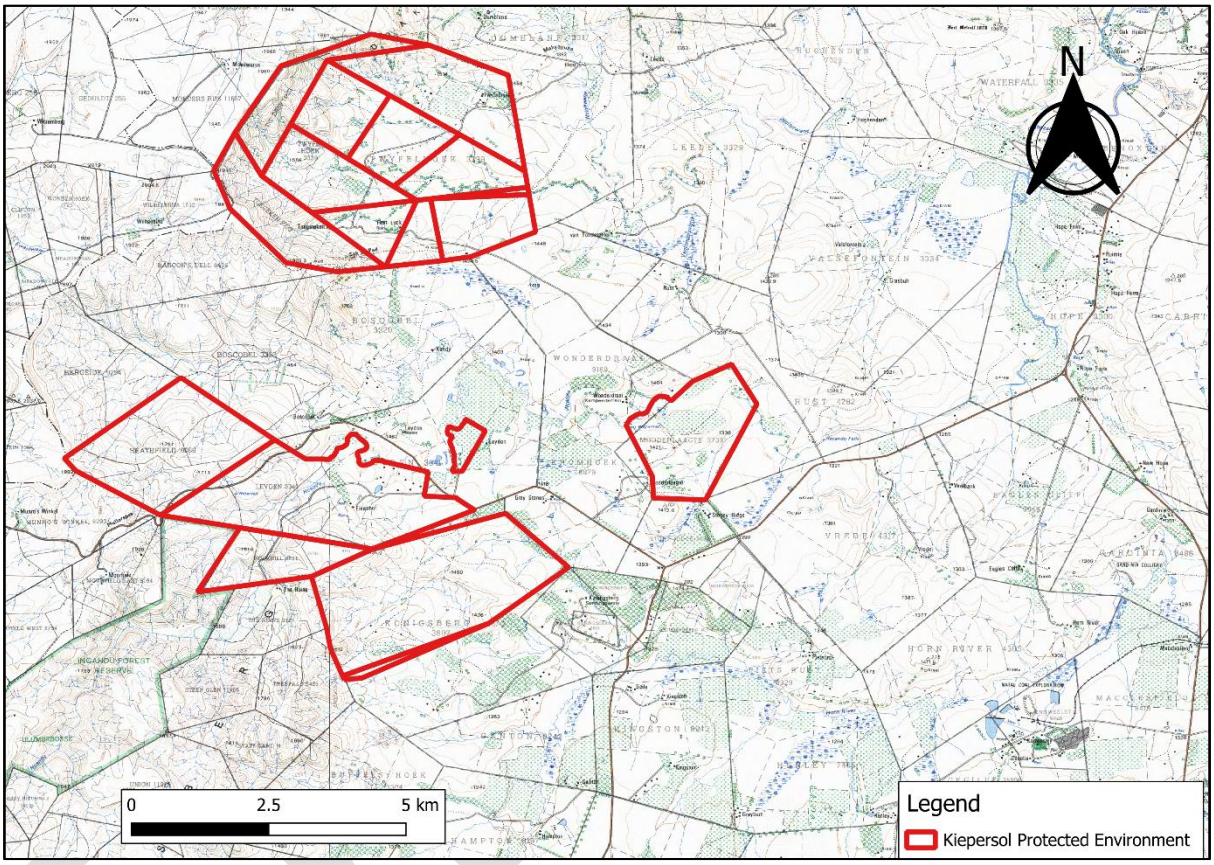

Figure 7. Topographic map of the Kiepersol Protected Environment

2.2.3. Geology and Soils

The area is described to fall withing the "Fa land type" by Smit *et al*. (1993). This land type consists predominantly of the Lower Beaufort Stage geology.
The escarpment slopes that are steep in nature are made up of weathering sandstones of the Normandien formation from the latest Permian Age (of the Lower Beaufort Group).
The "Fa land type" also has dolerite, mudstones, shale, sandstones and shale of the Volksrust Formation. The main soil types for the "Fa land type" are Mispah and Glenrosa forms that are most often shallow.

2.2.4. Geomorphology

The area is characterised by recessed sandstone cliffs. There are streams in the kloofs with high altitude forested riparian zones. There is also some evidence of erosion in the steeper cliffs, which becomes more pronounced during periods of heavy rainfall.

2.2.5. Hydrology

The protected environment is found in the V31J and V31H quaternary catchments (Ngagane). This lies withing the Thukela Water Management area and within the Buffalo Secondary Catchment (V3). There are several stream sources within the protected environment in recessed sandstone cliffs.

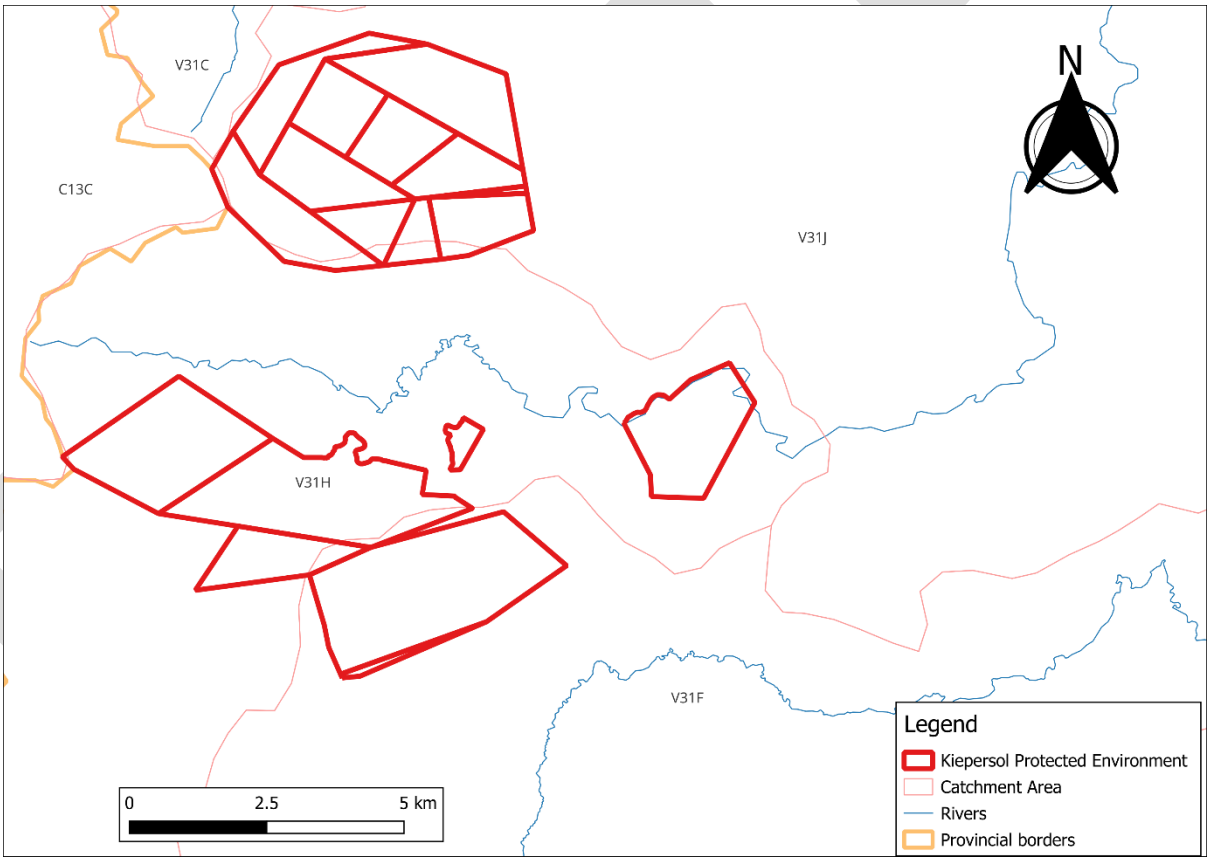

Figure 8. Hydrology of the Kiepersol Protected Environment

2.2.6. Vegetation

The following habitat types are identified in the Kiepersol Protected Environment:

- Eastern Mistbelt Forests
- Low Escarpment Moist Grassland
- Northern KwaZulu-Natal Moist Grassland
- Alluvial Wetlands: Temperate Alluvial Vegetation
- Alluvial Wetlands: Temperate Alluvial Vegetation: Midland Floodplain Grasslands

Figure 9. Vegetation types within the Kiepersol Protected Environment (Data: EKZNW)

2.2.7. Mammalian fauna

The Kiepersol Protected Environment has populations of Bushbuck (*Tragelaphus scriptus*) and Grey Duiker (*Sylvicapra grimmia*). There are also Chacma Baboon (*Papio ursinus*), Common Molerat (*Cryptomys hottentotus natalensis*), Rock Hyrax/Dassie (*Procavia capensis*), Striped Mouse (*Rhabdomys pumilio*), Vlei Rat (*Otomys irroratus*), Oribi (*Ourebia ourebi*), Grey Rhebok (*Pelea capreolus*), Warthog (*Phacochoerus africanus*) and Black-backed Jackal (*Canis mesomelas*) and Mountain Reedbuck (*Redunca fulvorufula*).

2.2.8. Avifauna

The following threatened species occur at the site:

- Bald Ibis (*Geronticus calvus*)
- Bush Blackcap (*Lioptilus nigricapillus*)
- Secretarybird (*Sagittarius serpentarius*)
- Denham's Bustard (*Neotis denhami*)
- Grey Crowned Crane (*Balearica regulorum*)
- White-bellied Korhaan (*Eupodotis senegalensis*)
- Grass Owl (*Tyto capensis*)
- African Marsh Harrier (*Circus ranivorus*)
- Bush Blackcap (*Sylvia nigricapillus*)

2.2.9. Herpetofauna (Reptiles and Amphibians)

The Spiny Crag Lizards (*Pseudocordylus spinosus*) have been recorded in the area. It is possible that the endangered Long-Toed Tree Frog (*Leptopelis xenodactylus*) could occur on the farm as well as a species of Dwarf Chameleon (*Bradypodion* species) that has been recorded in nearby forests.

2.2.10. Invertebrates

The endangered Northern Black Millipede (*Doratogonus septentrionalis*) is endemic to KwaZulu-Natal and is known to have a restricted distribution. There is also a newly discovered Keeled Millipede recorded in the area (*Ulodesmus* species) and other endemics such as the Pearlrose's Spined Millipede (*Zinophora pearlae*), White-haired Robber Fly (*Hypenetes argothrix*), Bourquin's Earthworm (*Proandricus bourquini*) and the near-endemic Drakensberg Tail-Wagger (*Sheldonia transvaalensis*).

2.2.11. Fire and Herbivore Management

Policy statement:
Fire management will be used primarily as a tool to manage natural grassland integrity.

Fire is important for the functioning of the grassland biome and therefore the biota are well adapted for consistent fires. The types of communities and the functioning of the ecosystem are influenced by the variation of the fire regime (Mentis and Tainton 1984).

The Kiepersol Protected Environment will use fire primarily for the purpose of biodiversity value and preventing damage to neighbouring farms.

Firebreaks will be burnt every year on the border region (for a distance of 6 m from the border fences), including the Free State border.

Block burning will be done according to the SANBI Grazing and Burning Guidelines (SANBI 2014).

Fires will be excluded from areas near the Eastern Mistbelt Forests and these are shown in Figure 12.

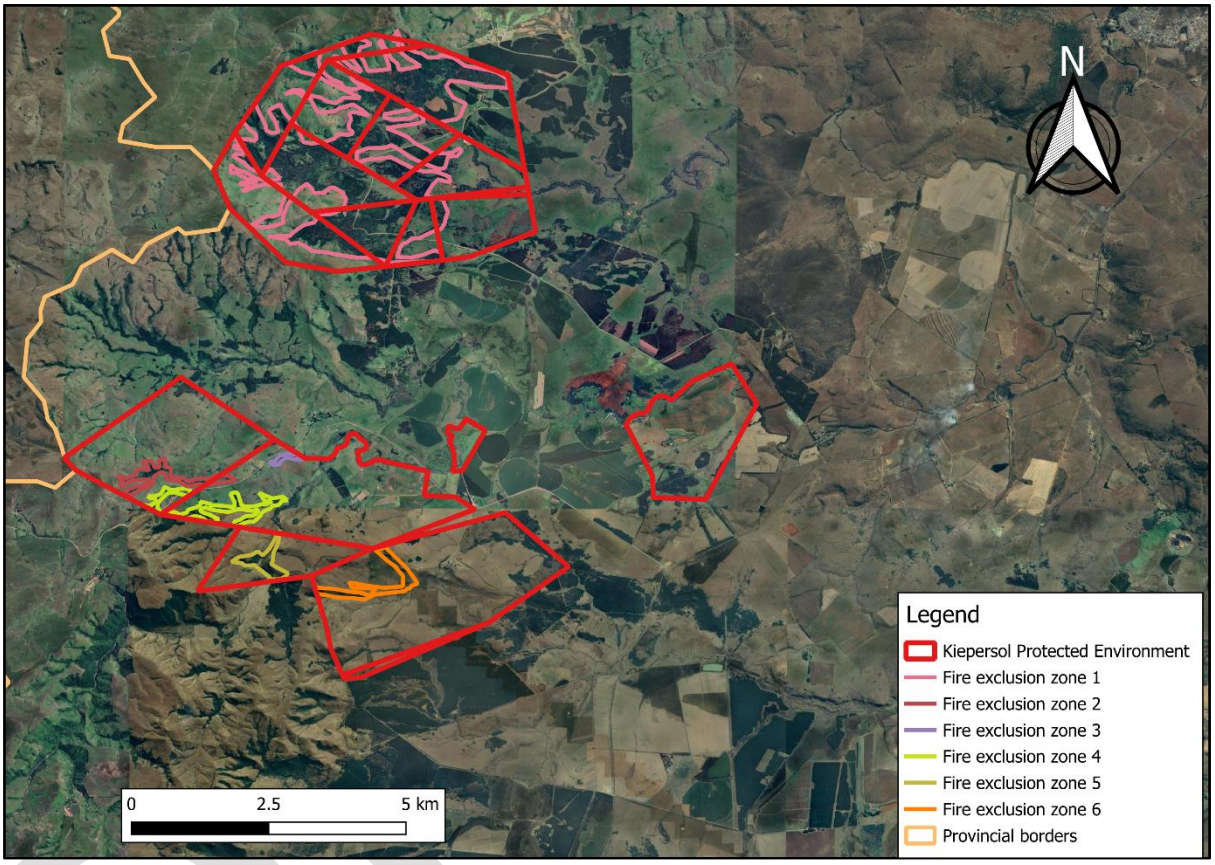

Figure 10 . Fire exclusion zones in the Kiepersol Protected Environment

The Fire Protection Association meets annually before the start of the fire season. During the meeting, the previous season's burns are reviewed and management compartments for burns in the upcoming fire season will be recorded as the Annual Burning Plan for implementation. The reserve's management structures meet throughout the fire season.

Cattle management:
The current stocking rate is 4 ha per livestock unit.

2.2.12. Invasive species

Policy statement:
Invasive alien plant species on the property will be controlled using a planned and time-bound clearing strategy.

Invasive plants that are declared invader plants or weeds according to Agricultural Resources Act (1983) (CARA) No. 43 of 1983, are a threat to the ecological functioning of natural systems and water production.
These plants must be controlled in terms of the relevant CARA regulations. A programme to effectively control the invasive plants within the Kiepersol Protected Environment is being developed. The Working for Water Programme may also be used to add to the management of invasive plant species on the property.
Key species for the area include:

- Black Wattle (*Acacia mearnsii*): Category 2
- Bramble (*Rubus cuneifolius*): Category 1b
- Bugweed (*Solanum mauritianum*): Category 1b
- Poplar (*Populus canescens*): Category 2
- Silver Wattle (*Acacia dealbata*): Category 2
- Lantana (*Lantana camara*): Category 1b

The current strategy includes:

- Employees clear at least 10 hectares of the protected environment per year and target mainly Black Wattles as well as Silver Wattles.
- Poison is used to treat stumps as well as paint to indicate where clearing has taken place
- Records are kept of areas that are cleared
- Follow-up work is carried out in areas where coppicing may occur
- Education of employees regarding invasive species is an ongoing tasks

Other species:

- Bracken fern (*Pteridium aquilinum*) has established itself in certain areas of the Kiepersol Protected Environment and pose a problem for palatable grass species that are outcompeted and therefore reduces the available food for grazing herbivores.
- Ouhout (*Leucosidea sericea*) has also established itself in many areas and may be cleared to avoid bush encroachment

Figure 11. Current invasive plant control in the Kiepersol Protected Environment

2.3. Cultural heritage context of Kiepersol Protected Environment

There are no known important historical for the properties making up the Kiepersol Protected Environment.

2.3.1. Local Municipality

The Kiepersol Protected Environment is located within the Newcastle Local Municipality in the Amajuba District Municipality.

2.3.2. Socio-Economic Context

The following information is taken from the Amajuba District Municipality Integrated Development Plan 2023/24-2026/27:

Amajuba district comprises of a total population which is estimated at 531 327 people who are accommodated on 117 256 households. Newcastle has the highest population which is estimated at 389 117 people (90 347 households) within 34 wards followed by Dannhauser 105 341 people (20 242 households) within 13 wards and Emadlangeni with 37 869 people (6 668 households) within 6 wards.

The Amajuba District Municipality shows a significant proportion of youth dependency. The age structure shows that a total of 60.85% of the population are of the working age group, while 35.43% are under the age of 15 years and 3.72% are pensioners over the age of 65.

2.3.3. The regional and local planning context of Kiepersol Protected Environment

The following areas of growth potential have been identified in the Amajuba Integrated Development Plan (2023/24-2026/27) as part of the tourism ventures:

- *Establishment of tourism attractions at Ncandu and Drakensberg foothills, including Vulintaba Resort*
- *Development of the N11 as a tourism route linking Ladysmith to Newcastle and beyond*
- *Creating further adventure tourism rotes such as 4by4 and biking routes*
- *Promotion of Amajuba's birding spots through BLNN*
- *Agricultural tourism*
- *Camping facilities, opening up new tourism areas*

2.4. Operational management within Kiepersol Protected Environment

2.4.1. Infrastructure

Infrastructure, such as buildings and houses is only located at the following places at the Kiepersol Protected Environment:

- Remaining Extent of Twyfelhoek 339
- Portion 1 of Leyden 3341
- Portion 1 of Konigsberg 3807
- Portion 1 of Modderlaagte 15517

2.4.2. Operational management

The properties are currently used for low-intensity grazing by cattle. The cattle graze in a rotational system and burning is done on a patch-mosaic basis.
Crop farming is found in the lower areas and mainly pasture and maize and forestry plantations are found on the northwestern section of the protected environment.

2.5. Summary of management issues, challenges and opportunities

The management issues, challenges and opportunities are summarised in Table 2.

Table 2. Management issues, challenges and opportunities for the Kiepersol Protected Environment

Key Performance Area	Issue	Opportunity	Challenge
Fire management	Grassland health	Improved grazing and grassland biodiversity	Consistent, safe and effective block burning and firebreaks
	Danger to human life and property, ecosystem and asset damage	Continued leadership in local FPA	Severe winds, maintaining natural forest patches
Invasive species	Water and ecosystem integrity	Use of biomass for firewood and/or wood products and employment opportunities	Wattles, Bugweed and the follow up needed
Conservation management	Biodiversity conservation and persistence of ecosystem services	Improved ecosystem service delivery and resilience	Balancing human activities with conservation actions
Soil erosion	Instability		Slopes collapse during heavy rainfall
	Sediment generation		Siltation of water courses/impoundments and loss of topsoil and fertility
Road maintenance	Unstable roads	Employment opportunities	Steep roads, access and stabilisation needed
Socio-economic contribution	Tourism	Birding, hiking and nature tourism	Trail maintenance and accommodation facilities
	Skills development and employment	Local community capacitated for various skills on the reserve	Administration and logistics
Contribution to scientific research	Bird, mammal, amphibian, plants and reptile research	Data obtained on the occurrence of species in the area	Logistics

3. Strategic management framework

3.1. Kiepersol Protected Environment Vision

The vision of the Kiepersol Protected Environment is as follows:
To conserve the natural biodiversity, scenic beauty and water resources of the Kiepersol Protected Environment and add socio-economic value to the community through skill development and tourism

3.2. Objectives and Strategic Outcomes

An objective has been identified for each of Kiepersol Protected Environment key performance areas, which follow from the management challenges, issues and opportunities, and relate to the important functions and activities necessary to protect, develop and manage it effectively. Table 4 sets out the key performance areas, the objective for each key performance area and the strategic outcome required to realise the objective.

Table 3. Objectives and strategic outcomes for Kiepersol Protected Environment

Key performance area	Objective	Strategic outcome
Fire management	Maintain firebreaks to prevent unplanned fires and burn at ecologically appropriate intervals	• Well maintained healthy grassland with high biodiversity • Prevention of damage to ecosystem and reserve assets • Safe environment for people • Legal compliance
Invasive plant control	To eradicate invasive plants on site for preservation of water resources and biodiversity integrity	• Healthier ecosystem – biodiversity, sediment and nutrients • Maintenance of water provision services
Conservation management	To implement appropriate and sustainable conservation policies in the Kiepersol Protected Environment	• Accept responsibility for the perpetual custody of the Northern KZN moist grassland and Eastern Mistbelt Forest habitat found on the reserve as well as the natural water resources
Soil erosion	To implement appropriate and sustainable grazing and soil management at the reserve	• Prevention of excessive sediment generation and loss of topsoil • Maintain good grazing for livestock • Maintain healthy grass component • Maintain stability of slopes
Road maintenance	Maintain the existing road infrastructure by following appropriate management practices	• Maintain access for ecological management and tourism activities
Socio-economic contrition	To share the beauty and biodiversity of the area with people in the form of low impact tourism activities	• Development of the local economic to benefit communities
	To propose skills development and employment	• Develop skills of the local community and create employment opportunities • Foster a sense of appreciation of nature and ecosystem
	To recognise that it will be necessary to assist neighbouring landowners when required to ensure the relationship is a win-win situation	• Maintain good relationship with surrounding landowners and communities

Contribution to scientific research	To facilitate research into ecosystems and species in the area	• Long-term contribution to zoological, botanical and ecosystem known • Knowledge sharing on other conservation activities

4. Zonation plan

The purpose of the zonation of Kiepersol Protected Environment is to identify the types and level of usage that are acceptable based on the area's sensitivity and resilience. Zonation may be used to identify areas in which appropriate uses and infrastructure may be located and development

Figure 12. Zonation map showing the Kiepersol Protected Environment boundary and zones of low to high levels of impact

The system adopted for Kiepersol Protected Environment recognises and reflects:

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

5. Administrative structure

A description of and a diagram of an indicative organisational structure that depicts how oversight and cooperation with partners is undertaken, and how operational management activities are structured is shown in Figure 16 below.

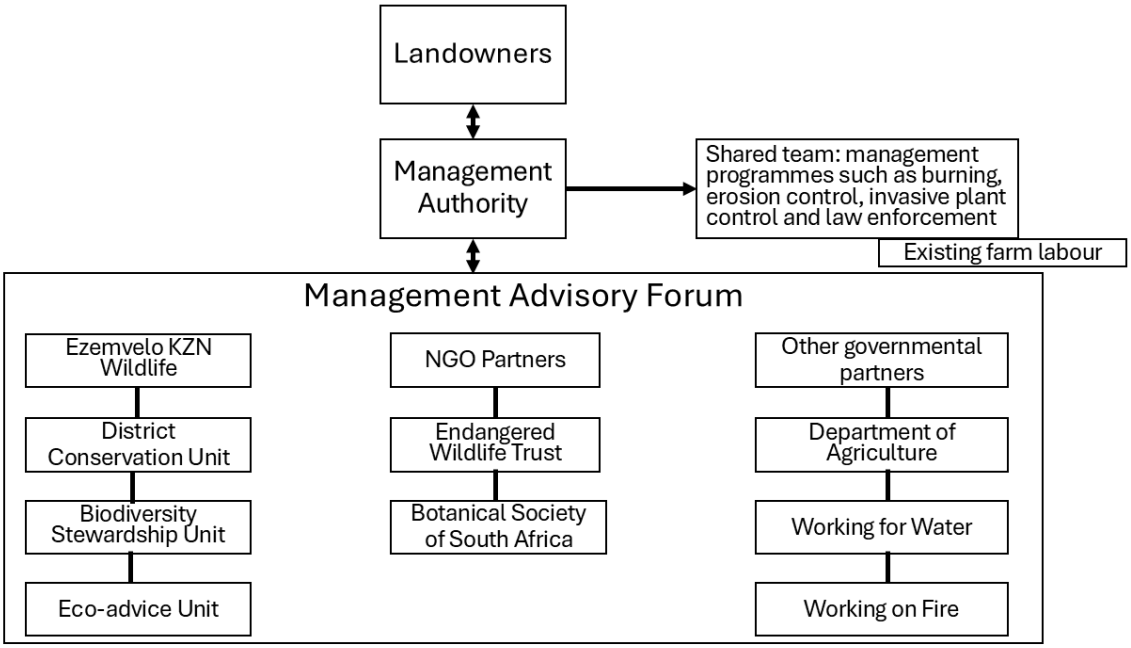

Figure 13. Organisational structure for the Kiepersol Protected Environment

4. Operational management framework

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

4.1. Legal compliance and law enforcement

The principles underlying the management plan for the Kiepersol Protected Environment are based on general principles guiding the attainment of sustainability – good resource management; equitable and appropriate community involvement and beneficiation; the creation of sustainable business opportunities; and clear policies, objectives and operational guidelines.

Within the South African context, ensuring compliance to relevant legislation is pivotal to the attainment of sustainability, and it is imperative that all actions are compliant with all relevant legislation appropriate to biodiversity, nature reserve and cultural resource management and development:

- The Constitution of South Africa (Act No. 108 of 1996)
- KwaZulu-Natal Nature Conservation Management Act (Act No. 9 of 1997)
- Animals Protection Act (Act 71 of 1962)
- Atmospheric Pollution Prevention Act (Act No. 45 of 1965)
- Conservation of Agricultural Resources Act (Act No. 43 of 1983)
- Criminal Procedure Act (1977)
- Forest Act (Act No. 122 of 1984)
- National Forests Act (Act No. 84 of 1998)
- National Environmental Management Act (Act No. 107 of 1998)
- National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004)
- National Environmental Management Act: Protected Areas Act (Act No. 57 of 2003)
- National Heritage Resources Act (Act No. 25 of 1999)
- AMAFA aKwaZulu-Natali / Heritage KwaZulu-Natal: KwaZulu-Natal Heritage Act (Act No. 10 of 1997)
- KwaZulu-Natal Heritage Management Act (Act No. 10 of 1977)
- Traditional Healers Act (Act No. 10 of 2004)
- National Water Act (Act No. 36 of 1998)
- National Veld and Forest Fire Act (Act No. 101 of 1998)
- Local Government: Municipal Systems Act (Act No. 32 of 2000)

Human Resource management:

- Basic Conditions of Employment Act (Act No. 75 of 1997)
- Compensation for Occupational Injuries and Diseases Act (Act No. 130 of 1993)
- Labour Relations Act (Act No. 66 of 1995)
- Occupational Health and Safety Act (Act No. 85 of 1993)
- Skills Development Act (Act No. 5 of 1998)
- Unemployment Insurance Act (Act No. 63 of 2001)

These acts and ordinances guide the specific decisions actions and also provide the framework for monitoring performance and compliance as well as produce guidelines regarding contravention, offences and penalties.

The owners and managers of the reserve have a responsibility to ensure that the laws related to the conservation of the reserve and efforts to combat illegal activities, in particular poaching, are enforced. Furthermore, it is important that the reserve is properly legally secured and any legal risks and liabilities are appropriately addressed and managed. On this basis, the following guiding principles apply:

- All reasonable efforts must be made to ensure the effective conservation of biodiversity within and on the boundaries of the nature reserve
- Law enforcement in the reserve will be undertaken through surveillance, monitoring and appropriate reaction in the event of an offence
- Wildlife risks to people and infrastructure, both within the reserve and in neighbouring areas, will be managed and minimised to ensure that all minimum legal requirements are met and exceeded

4.2. Business management and development

Opportunities to optimise income, return on investment and value for shareholders must be taken into consideration. The natural resource base that supports the businesses that operate within the reserve must be protected to ensure the long-term sustainability of its nature-based business ventures. The guiding principle is as follows: the development and operation of business ventures and opportunities within the reserve will be consistent with the values and purpose for which it was created.
The operational requirements for legal compliance and law enforcement, and business management and development are set out in Table 5.

Table 4. Framework for legal compliance law enforcement and business management

Strategic outcome	Management activities	Management targets	Indicators of concern	Timing	Management authority responsibility	Partner responsibility
Phase 2 of Kiepersol Protected Environment						
Phase 2 of Kiepersol Protected Environment is incorporated into the existing area	The additional properties must be declared in terms of the Protected Areas Act	Legal protection in terms of the requirements of the Protected Areas Act		Year 1		
Law enforcement						
There is adequate law enforcement within the protected environment	Develop an integrated security strategy for the nature reserve, which ensures collaboration with all relevant institutions	Creation of cooperative structures with law enforcement officials	Recorded losses of fauna and flora and description of snares and arson fires	Year 1	Development of strategy	Support to landowner
	Ensure staff are equipped and trained to undertake patrols within the protected	Regular patrols of the protected environment by staff and a private security firm and		Ongoing	Implementation of a system of patrols	Prosecution of offenders

	environment for law enforcement purposes and implement a program for patrols	prosecution of any offender				
Sustainable utilisation within the protected environment						
Sustainable utilisation of natural resources in the protected environment	Income generation within the protected environment is optimised	Income generated within the protected environment ensures there is adequate financial resources to assist with management interventions	Lack of finances	Ongoing	Development of business ventures and associated infrastructure and provisions of finances to protect and operate the protected environment	Provision of advice and guidance on environmental issues for sustainable utilisation in the area

5. Monitoring and reporting

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

5.1. Annual monitoring

The annual monitoring schedule should be designed to monitor the implementation of aspects of the management plan and should be easy to use.
Records should be maintained of key management interventions and of problems encountered or incidents such as poaching.
Scientific monitoring programmes may be established to monitor specific management interventions such as measures for the protection of flagship species. Most of the outcomes of the monitoring process will be captured in an annual report that will be used to information the next year's annual plan of operation.
A monitoring schedule for Kiepersol Protected Environment has been compiled in Table 6.

Table 5. Annual monitoring schedule for the Kiepersol Protected Environment

Management issue	Parameters to be monitored	Monitoring measures	Monitoring frequency	Responsibility	Reporting requirements
Fire management	Moribund level of grass and previous burn history	In field inspection with ecologist	Annual	Landowners	Record of event
Firebreaks	Location of existing firebreaks	In field inspection	Annual	Landowners	Record of event
Grazing management	Veld condition and stocking rates	Basic veld assessment, stock count to ensure compliance	Quarterly	Landowners	Annual report
Indigenous forest management	Patrol forest for illegal medicinal plant collection and ensure fire preventative measures in place	In field inspection	Biannually	Farm labourers	Annual report
Invasive plant species control and management	Areas of heavy invasive plant infestation	Fixed point photography	Quarterly	Landowners	Annual report
	Herbicide use	Written record	Annual	Landowners	Annual report
Soil erosion	Eroded sites	In field inspection	Biannually	Landowners	Annual report
Infrastructure	Border fences intact	In field inspection	Quarterly	Farm labourers	Annual report
	Buildings	In field inspection	Annually	Landowners	Annual report
	Roads	In field inspection	Quarterly	Landowners	Annual report
Research	Veld condition	In field inspection	Once every 5 years	Landowners	Separate report

5.2. Annual protected area management plan implementation review

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

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

The minutes of the annual management meeting will form the basis of the report on the management plan review. The minutes should include records of recommendations for update/changes to the five-year plan so that when the five-year plan is revised for the subsequent five years. These recommendations can be assessed and included where necessary.

6. Kiepersol Protected Environment annual plan of operation

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

6.1. Implementation of the management plan

The process for the implementation of the management plan is shown in Figure 17.

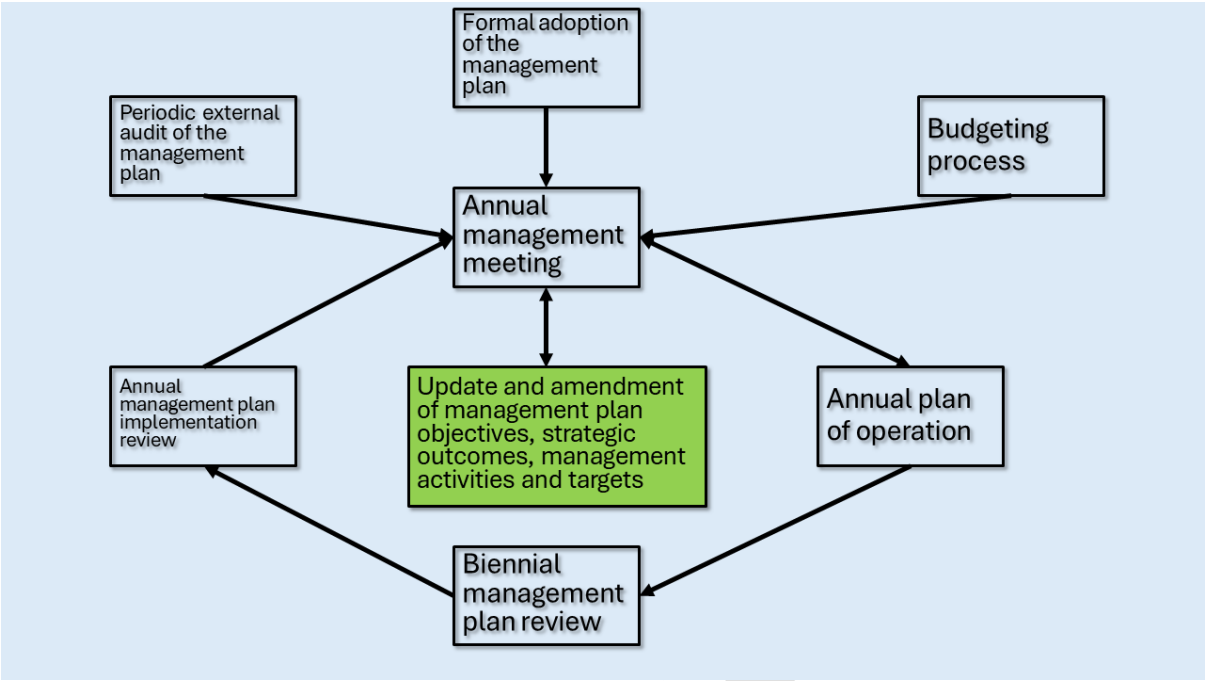

Figure 14. Process for the implementation of the Kiepersol Protected Environment management plan

There will be a management meeting held every year for the protected environment. The purpose of the meeting will be to:

- Finalise the annual report, as part of the annual management plan review
- Determine the need to modify or change any of the objectives, strategic outcomes, management activities or targets as part of the annual performance review
- Determine management activities for the following year and set goals for the year, based on the key performance areas set out in the management plan

The minutes and notes from the annual management meeting will be compiled in an annual plan of operation, which will include all of the information and determine what important management activities need to be completed for the following year. A pro-forma annual plan of operation is shown in Annexure E and Table 6 displays the progress and goals set for the Kiepersol Protected Environment.

6.2. Responsibilities in implementing the protected area management plan

The responsibilities for the completion of the management activities have been identified and persons responsible should attend annual management meetings. The requirements for the achievement of the management activities can be discussed and agreed upon at this meeting. However, in some cases, the management activities may be required to be referred to an individual within a conservation authority or partner in order to ensure that the management activity is implemented.

6.3. Kiepersol Protected Environment resource requirements

The resource requirements and associated management activities and targets set out on the operational management framework must be considered and taken into consideration for financial budgeting. The following section broadly identifies the issues that must be considered to determine adequate human resources, finances and equipment required for the site.

8.3.1. Staff and equipment

Annual plans of operation must consider the staff and equipment needs required for the following activities to take place:

- Community liaison and the implementation of socio-economic projects aimed at improving livelihoods within the communities surrounding the protected environment.
- Implementation of an education, awareness and interpretation programme for the protected environment.
- Periodic rangeland condition assessments and other technical ecological management activities
- Records of game species such as oribis
- Annual burning programme and fire-fighting response to wild and planned fires
- Ongoing invasive species control programme and bush encroachment control programme
- Ongoing soil erosion control and rehabilitation programme
- Implementation and maintenance of scientific research, surveillance and monitoring programmes
- Maintenance of roads, paths and fences within the site
- Maintenance of facilities and infrastructure within the site
- Human resource management and staff training with capacity development
- Compliance with requirements in terms of the Occupational Health and Safety Act

8.3.2. Projects

Projects can be developed over time to assist with conservation efforts in the protected environment. Additional assistance and funding may possibly be needed. The following project has been seen as a priority:

- Control of problem invasive trees (by clearing sections every year and making a start in clearing the wattle trees in the area surrounding Ncandu Nature Reserve with assistance of Ezemvelo KZN Wildlife)

7. References

- Amajuba District Municipality Integrated Development Plan 2023/24-2026/27. Amajuba District Municipality: Newcastle.
- Amajuba District Municipality. Undated. Annual Rainfall Records. Available from URL: https://www.amajuba.gov.za/media/4uwfbf0d/map_031-annual-rainfall-regions-newcastle.pdf
- Dannhauser Local Municipality. Available from URL: http://www.dannhauser.gov.za/
- Mentis, M.T and Tainton, N.M. 1984. The effect of Fire on Forage Production and Quality. *Ecological Effects of Fire in South African Ecosystems*. pp 245-254.
- Meteoblue. 2025. Weather Archive Newcastle. Available from URL: https://www.meteoblue.com/en/weather/historyclimate/weatherarchive/newcastle_south-africa_971421?fcstlength=1y&year=2024&month=2
- National Environmental Management Act. 2003. Act Number 57 of 2003.
- Pantus, F.J., Abal, E., Pearson, L. and Steven, A. 2008. Healthy Waterways Management Strategy Evaluation: Science support for catchment-to-coast water quality management. CSIRO: Wealth from Oceans and Water for a Healthy Country National Research Flagships. CSIRO Publishing: Cleveland, Australia.
- South Africa Bird Atlas Project. 2023. Pentad 2800_2935. Available from URL: https://sabap2.birdmap.africa/coverage/pentad/2800_2935
- SANBI. 2014. Grazing and Burning Guidelines: Managing Grasslands for Biodiversity and Livestock Production. Compiled by: Lechmere-Oertel, R.H. South African National Biodiversity Institute, Pretoria.

ANNEXURES

Appendix A

DEFINITION OF TERMS

Biodiversity	The variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and 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 (Act No. 10 of 2004)
Buffer zone	An area surrounding a protected area that has restrictions in place on its use of where collaborative projects and programmes are undertaken to afford the additional protection of the nature reserve
Cultural Heritage	Cultural heritage is considered as "monuments, architectural works, works of monumental sculpture and painting, elements or structure of an archaeological nature, inscriptions, cave dwellings and combinations of features" which are as value from a historical point of view as well as art, science and works of man. Living features such a mountains, pools, rivers and boulders as well as palaeontological features are also included under this definition
Ecotourism	To travel to areas to learn about the way of life and cultural and natural history of an area, while taking care not to harm the environment
Ecological integrity	The combination of biological, physical and chemical components of an ecosystem and its products, functions and attributes (National Environmental Management: Protected Areas Act, 2003).
Ecosystem	A dynamic complex of annual, plant and micro-organism communities and their non-living environment interacting as a functional until (National Environmental Management: Protected Areas Act, 2003).
Ecosystem services	According to Section 1 of the National Environmental Management: Protected Areas Act, 2003, this is defined as "environmental goods and services" with a) Benefits obtained from ecosystems such as food, fuel and fibre and genetic resources b) Benefits from the regulation of ecosystem processes such as climate regulation, disease and flood control and detoxification c) Cultural non-material benefits obtained from ecosystems such as benefits of a spiritual, recreational, aesthetic, inspirational, educational, community and symbolic nature Note: sustainable water production is also specifically included under this definition for the purpose of this management plan

Environmental degradation	The deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems and the loss of species or undesirable reduction of species population numbers from a specific area from an environmental health perspective
Indigenous species	A species that occurs, or has historically occurred naturally in a specific area and excludes species introduced into a protected area from human activity (National Environmental Management: Protected Areas Act 2003)
Invasive species	Any species that has spread outside of its natural distribution range and: • Threaten ecosystems, habitats or other species pr have a demonstrable potential to threaten ecosystems, habitats or other species • May result in economic and environmental harm or harm to human health (National Environmental Management: Protected Areas Act 2003)
Joint management	The agreed coordination of management and/or management actions by landowners and/or mandated managers on their individual or combines properties in order to achieve common management objectives
Local community	Any community of people living or having rights or interests in a distinct geographical area (National Environmental Management: Protected Areas Act 2003)
Management	In relation to a protected area, includes control, protection, conservation, maintenance and rehabilitation of the protected area regarding 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 (National Environmental Management: Protected Areas Act 2003)
Management authority	In relation to a protected area, this is the organ of state or other institution or person in which the authority to manage the protected area is vested (National Environmental Management: Protected Areas Act 2003)
Monitoring	The collection and analysis of repeated observations or measurements to evaluate change in status, distribution or integrity in order to track the impacts of directed management implemented to achieve a stated management objective
Neighbouring community	The community and people permanently living in the municipal areas bordering onto the nature reserve
Natural heritage	These are the natural features consisting of physical and biological formations or groups of such formations which are available from an aesthetic, scientific point of view, geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of plants and animals. For the purpose of this management plan, this would include the required ecological integrity of the protected area for the production of ecosystem services.

Partnerships	A co-operative and/or collaborative arrangement between the private nature reserve management / Ezemvelo KZN Wildlife and a third partner that supports the objectives of the nature reserve
Protected Areas	Any area declared or proclaimed 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). It can also be any of the protected areas proclaimed in Section 9 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).
Stakeholders/ Interested parties	These are individuals or groups who are interested or affected by an activity and the impacts of it. These can include the general members of the public, authorities, local communities, environmental interest groups and consumers. According to the National Environmental Management: Biodiversity Act 2004 (Act No. 10 of 2004), a "stakeholder" is a person, an organ of state or a community contemplated in section 82 (1) (a), or an indigenous community contemplated in section 82 (1) (b).
Surveillance	The collection and analysis of single or repeated measurements to establish status or distribution or integrity at a point in time in the absence of a specific management context or objective.
Sustainable	This is the use of a biological resource in such a rate that it will not lead to its decline and not disrupt the ecological integrity of the ecosystem in which it occurs and would ensure its continued use to meet the needs and aspirations of present and future generations of people, as per National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
Wilderness Area	This is an area that has been designated in terms of Section 22 or 26 for the purpose of retaining an intrinsically wild appearance and character or capable of being restored into its original state and has no permanent improvements or human habitation as per National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).
World Heritage Site	This is an area that is defined in the World Heritage Convention Act, No. 49 of 1999 under chapter 1, section 1, subsection xxiv.

LIST OF LEGISLATION RELEVANT TO THE KIEPERSOL PROTECTED ENVIRONMENT

Appendix B

Biodiversity and Cultural Resource Management and Development:

- AMAFA aKwaZulu-Natali / Heritage KwaZulu-Natal: KwaZulu-Natal Heritage Act (Act No. 10 of 1997)
- Animals Protection Act (Act 71 of 1962)
- Atmospheric Pollution Prevention Act (Act No. 45 of 1965)
- Conservation of Agricultural Resources Act (Act No. 43 of 1983)
- Criminal Procedure Act (1977)
- Forest Act (Act No. 122 of 1984)
- Hazardous Substances Act (Act No. 15 of 1973)
- KwaZulu-Natal Heritage Management Act (Act No. 10 of 1977)
- KwaZulu-Natal Nature Conservation Management Act (Act No. 9 of 1997)
- National Environmental Management Act (Act No. 107 of 1998)
- National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004)
- National Environmental Management Act: Protected Areas Act (Act No. 57 of 2003)
- National Forests Act (Act No. 84 of 1998)
- National Heritage Resources Act (Act No. 25 of 1999)
- National Veld and Forest Fire Act (Act No. 101 of 1998)
- National Water Act (Act No. 36 of 1998)
- Nature Conservation Ordinance (Act No. 15 of 1974)
- The Constitution of South Africa (Act No. 108 of 1996)
- Traditional Healers Act (Act No. 10 of 2004)

General Management:

- Development Facilitation Act (Act No. 67 of 1995)
- Disaster Management Act (Act No. 57 of 2002)
- Fire Brigade Services Act (Act No. 99 of 1987)
- KwaZulu-Natal Planning and Development Act (Act No. 27 of 1949)
- Local Government: Municipal Systems Act (Act No. 32 of 2000)
- Natal Town Planning Ordinance (Act No. 27 of 1949)
- National Building Standards Act (Act No. 103 of 1977)
- National Road Traffic Act (Act No. 93 of 1996)
- Water Services Act (Act No. 108 of 1997)

Financial Management:

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

Human Resource Management:

- Basic Conditions of Employment Act (Act No. 75 of 1997)
- Broad-based Black Economic Empowerment Act (Act No. 53 of 2003)
- Compensation for Occupational Injuries and Diseases Act (Act No. 130 of 1993)
- Employment Equity Act (Act No. 55 of 1998)
- Labour Relations Act (Act No. 66 of 1995)
- Occupational Health and Safety Act (Act No. 85 of 1993)
- Pension Funds Act (Act No. 24 of 1956)
- Skills Development Act (Act No. 5 of 1998)
- Skills Development Levies Act (Act No. 9 of 1999)
- Unemployment Insurance Act (Act No. 63 of 2001)

PROCLAMATION OF THE KIEPERSOL PROTECTED ENVIRONMENT

Appendix C

PROVINCIAL NOTICE 592 OF 2023

KWAZULU-NATAL DEPARTMENT OF ECONOMIC DEVELOPMENT, TOURISM AND ENVIRONMENTAL AFFAIRS

DECLARATION OF THE KIEPERSOL PROTECTED ENVIRONMENT IN TERMS OF SECTION 28(1) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT, 2003

I, Siboniso Duma, in my capacity as Member of the KwaZulu-Natal Provincial Executive Council for Economic Development, Tourism and Environmental Affairs, and under powers vested in me by section 28(1) of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) ("the Act"), hereby declare that –

(a) subsequent to consultation with the relevant parties as contemplated in section 32(2) of the Act;

(b) subsequent to the publication of Notice Number 413 of 2 February 2023 in Provincial *Gazette* 2504, and an advert in two national newspapers, in which my intention to declare the Kiepersol Protected Environment was duly published in accordance with the requirements of section 33(1) of the Act;

(c) subsequent to consent being provided by the landowners in accordance with section 28(3) of the Act; and

(d) with effect from the date of publication of this Notice,

the properties described in the Schedule hereto are a Protected Environment, known as the Kiepersol Protected Environment, as contemplated in sections 28(1)(a)(i) and section 28(1)(b) of the Act.

Given under my hand at **DURBAN** this 15TH day of August, Two Thousand and Twenty-three

Mr S.A. Duma, MPL
Member of the KwaZulu-Natal Executive Council
responsible for environmental affairs

SCHEDULE

Name of the protected area (section 23(1)(b) of the National Environmental Management: Protected Areas Act (No. 57 of 2003): the **Kiepersol Protected Environment**

Category of protected area (section 28(1)(i) of the National Environmental Management: Protected Areas Act (No. 57 of 2003): **Protected Environment**

Management Authority assigned: Kiepersol Protected Environment Landowners Association

Description of properties or parts thereof comprising the Kiepersol Protected Environment:

1. Portion 1 of the farm Konigsberg No. 3 3807, located in the registration division HS of the province of KwaZulu-Natal, in extent 856,5330 (eight hundred and fifty six comma five three three zero) hectares, held under Deed of Transfer No. T19048/1982.
2. Portion 2 of the farm Konigsberg No. 3 3807, located in the registration division HS of the province of KwaZulu-Natal, in extent 26,9542 (twenty six comma nine five four two) hectares, held under Deed of Transfer No. T19048/1982
3. Remaining Extent of the farm Twyfelhoek 3339, located in the registration division HS of the province of KwaZulu-Natal, in extent 403,0875 (four hundred and three comma zero eight seven five) hectares, held under Deed of Transfer No. T43244/1999.
4. Portion 3 (Remaining Extent) of the farm Twyfelhoek 3339, located in the registration division HS of the province of KwaZulu-Natal, in extent 178,9686 (one hundred and seventy eight comma nine six eight six) hectares, held under Deed of Transfer No. T43244/1999.

5. Portion 5 of the farm Twyfelhoek 3339, located in the registration division HS of the province of KwaZulu-Natal, in extent 13,7112 (thirteen comma seven one one two) hectares, held under Deed of Transfer No. T43244/1999.
6. Portion 1 (Remaining Extent) of the farm Leyden 3341, located in the registration division HS of the province of KwaZulu-Natal, in extent 747,9735 (seven hundred and forty seven comma nine seven three five) hectares, held under Deed of Transfer No. T27145/2018.
7. Remaining Extent of the farm Rockhill 8611, located in the registration division HS of the province of KwaZulu-Natal, in extent 202,5347 (two hundred and two comma five three four seven) hectares, held under Deed of Transfer No. T27145/2018.
8. Remaining Extent of the farm Heathfield 9089, located in the registration division HS of the province of KwaZulu-Natal, in extent 532,7514 (five hundred and thirty two comma seven five once four) hectares, held under Deed of Transfer No. T3304/2019.
9. Remaining Extent of the farm The Drop 14603, located in the registration division HS of the province of KwaZulu-Natal, in extent 214,1952 (two hundred and fourteen comma one nine five two) hectares, held under Deed of Transfer No. T43244/1999.
10. Portion 1 of the farm Twyfelhoek 3339, located in the registration division HS of the province of KwaZulu-Natal, in extent 242,8116 (two hundred and forty two comma eight one one six) hectares, held under Deed of Transfer No. T37897/2002.
11. Portion 2 (Remaining Extent) of the farm Twyfelhoek 3339, located in the registration division HS of the province of KwaZulu-Natal, in extent 206,3899 (two hundred and six comma three eight nine nine) hectares, held under Deed of Transfer No. T19343/1998.
12. Portion 4 (Remaining Extent) of the farm Twyfelhoek 3339, located in the registration division HS of the province of KwaZulu-Natal, in extent 192,6785 (one hundred and ninety two comma six seven eight five) hectares, held under Deed of Transfer No. T19343/1998.
13. Remaining Extent of the farm Toegeken 9739, located in the registration division HS of the province of KwaZulu-Natal, in extent 305,4746 (three hundred and five comma four seven four six) hectares, held under Deed of Transfer No. T19343/1998.
14. Portion 7 of the farm Twyfelhoek 3330, located in the registration division HS of the province of KwaZulu-Natal, in extent 192,6798 (one hundred and ninety two comma six seven nine eight) hectares, held under Deed of Transfer No. T3303/2019.

GENERAL FAUNA EXPECTED (adapted from Burns *et al.* 2009)

Appendix D

Species	Scientific Name
Mountain Pride	*Aeropetes tulbarghia*
Friendly Pond Hawker	*Aeshna minuscula*
Common River Frog	*Afrana angolensis*
Cape River Frog	*Afrana fuscigula*
Goldtail	*Allocnemis leucosticta*
Natal Mountain Catfish	*Amphilius natalensis*
Longfin Eel	*Anguilla mossambica*
Common Hairtail	*Anthene definita definita*
Divided Agate Snail	*Archachatina dimidiata*
Chubbyhead Barb	*Barbus anoplus*
Goldie Barb	*Barbus pallidus*
Brown-veined White	*Belenois aurota aurota*
African Common White	*Belenois creona severina*
Scarce Scarlet	*Bowkeria phosphor borealis*
Drakensberg Dwarf Chameleon	*Bradypodion dracomontanum*
Festive Red Tiger Moth	*Brephos festiva*
Penther's Bushveld Rain Frog	*Breviceps adspersus pentheri*
Karoo Toad	*Bufo gariepensis gariepensis*
Guttural Toad	*Bufo gutturalis*
Common Geranium Bronze	*Cacyreus marshalli*
Orange-banded Protea Butterfly	*Capys alphaeus extentus*
Warren's Coal-black Scorpion	*Cheloctronus anthracinus warreni*
Mountain Sylph	*Chlorolestes fasciatus*
African Clouded Yellow	*Colias electro electro*
Transvaal Girdled Lizard	*Cordylus vittifer*
Herald Snake	*Crotaphopeltis hotamboeia*
Common molerat	*Cryptomys hottentotus natalensis*
Common Meadow Blue	*Cupidopsis cissus*
Spike-femured robberfly	*Damalis femoralis*
African Monarch	*Danaus chrysippus aegyptius*
Northern Black Millipede	*Doratogonus septentrionalis*
Common African Blue	*Enallagma glaucum*
Cratered Leaf Chafer	*Erieshis hypocrite*
Broad-bordered Glass Yellow	*Eurema brigitta brigitta*
Marsh Blue	*Harpendyreus noquasa*
Natal Ghost Frog	*Heleophyryne natalensis*
White-haired Robber Fly	*Hypenetes argothrix*
Fulvous Ranger	*Kedestes mohozutza*

Lucerne Blue	*Lampides boeticus*
Peter's Thread Snake	*Lioptilus nigricapillus*
Eastern Sorrel Copper	*Mabuya punctatissima*
Gold-spotted Sylph	*Metisella metis*
Insect: Neolophonotus Fly	*Neolophonotus wroughtoni*
Delalande's Sandveld Lizard	*Nucras lalandii*
Vlei Rat	*Otomys irroratus*
Green-banded Swallowtail	*Papilio nireus lyaeus*
Chacma baboon	*Papio ursinus*
Brook Brown-tail	*Paragomphus cognatus*
Burchell's Sand Lizard	*Pedioplanis burchelli*
Grey Rhebuck	*Pelea capreolus*
Gaudy Commodore	*Precis octavia sesamus*
Bourquin's Earthworm	*Proandricus bourquini*
Rock Hyrax	*Procavia capensis*
Mole snake	*Pseudaspis cana*
Drakensberg Crag Lizard	*Pseudocordylus melanotus subviridis*
Spiny Crag Lizard	*Pseudocordylus spinosus*
False Silver-bottom Brown	*Pseudonympha magoides*
Mountain Reedbuck	*Redunca fulvorufula fulvorufula*
Four-striped Grass Mouse	*Rhabdomys pumilio*
Drakensberg Tail-wagger	*Sheldonia transvaalensis*
Curle's Brown	*Stygionympha curlei*
Common Duiker	*Sylvicapra grimmia*
Bushbuck	*Tragelaphus scriptus*
Upland Spectrum-blue Dropwing	*Trithemis dorsalis*
Dismal Sylph	*Tsitana tsita*
Fair Lesser-thicktail Scorpion	*Uroplectes formosus formosus*
Painted Lady Butterfly	*Vanessa cardui*
Pearlrose's Spined Millipede	*Zinophora pearlae*

BIRD LIST FOR THE AREA – PENTAD 2800_2935: (from South Africa Bird Atlas Project, 2023)

Group	Species	Genus	Species
	Bokmakierie	*Telophorus*	*zeylonus*
	Brubru	*Nilaus*	*afer*
	Hamerkop	*Scopus*	*umbretta*
	Neddicky	*Cisticola*	*fulvicapilla*
	Quailfinch	*Ortygospiza*	*atricollis*
	Secretarybird	*Sagittarius*	*serpentarius*
Apalis	Bar-throated	*Apalis*	*thoracica*
Babbler	Arrow-marked	*Turdoides*	*jardineii*
Barbet	Acacia Pied	*Tricholaema*	*leucomelas*
Barbet	Black-collared	*Lybius*	*torquatus*
Barbet	Crested	*Trachyphonus*	*vaillantii*
Batis	Cape	*Batis*	*capensis*
Batis	Chinspot	*Batis*	*molitor*
Bishop	Yellow	*Euplectes*	*capensis*
Bishop	Yellow-crowned	*Euplectes*	*afer*
Blackcap	Bush	*Lioptilus*	*nigricapillus*
Boubou	Southern	*Laniarius*	*ferrugineus*
Bulbul	Dark-capped	*Pycnonotus*	*tricolor*
Bunting	Cape	*Emberiza*	*capensis*
Bunting	Cinnamon-breasted	*Emberiza*	*tahapisi*
Bunting	Golden-breasted	*Emberiza*	*flaviventris*
Bushshrike	Olive	*Chlorophoneus*	*olivaceus*
Bushshrike	Orange-breasted	*Chlorophoneus*	*sulfureopectus*
Bustard	Denham's	*Neotis*	*denhami*
Bustard	White-bellied	*Eupodotis*	*senegalensis*
Buzzard	Common	*Buteo*	*buteo*
Buzzard	European Honey	*Pernis*	*apivorus*
Buzzard	Forest	*Buteo*	*trizonatus*
Buzzard	Jackal	*Buteo*	*rufofuscus*
Canary	Black-throated	*Crithagra*	*atrogularis*
Canary	Brimstone	*Crithagra*	*sulphurata*
Canary	Cape	*Serinus*	*canicollis*
Canary	Forest	*Crithagra*	*scotops*
Canary	Yellow-fronted	*Crithagra*	*mozambica*
Chat	Ant-eating	*Myrmecocichla*	*formicivora*
Chat	Buff-streaked	*Campicoloides*	*bifasciatus*
Chat	Familiar	*Oenanthe*	*familiaris*
Chat	Mocking Cliff	*Thamnolaea*	*cinnamomeiventris*
Cisticola	Cloud	*Cisticola*	*textrix*
Cisticola	Croaking	*Cisticola*	*natalensis*
Cisticola	Lazy	*Cisticola*	*aberrans*

Cisticola	Levaillant's	*Cisticola*	*tinniens*
Cisticola	Wailing	*Cisticola*	*lais*
Cisticola	Wing-snapping	*Cisticola*	*ayresii*
Cisticola	Zitting	*Cisticola*	*juncidis*
Coot	Red-knobbed	*Fulica*	*cristata*
Cormorant	Reed	*Microcarbo*	*africanus*
Crane	Blue	*Grus*	*paradisea*
Crane	Grey Crowned	*Balearica*	*regulorum*
Crombec	Long-billed	*Sylvietta*	*rufescens*
Crow	Cape	*Corvus*	*capensis*
Crow	Pied	*Corvus*	*albus*
Cuckoo	Black	*Cuculus*	*clamosus*
Cuckoo	Diederik	*Chrysococcyx*	*caprius*
Cuckoo	Klaas's	*Chrysococcyx*	*klaas*
Cuckoo	Red-chested	*Cuculus*	*solitarius*
Darter	African	*Anhinga*	*rufa*
Dove	Laughing	*Spilopelia*	*senegalensis*
Dove	Red-eyed	*Streptopelia*	*semitorquata*
Dove	Ring-necked	*Streptopelia*	*capicola*
Drongo	Fork-tailed	*Dicrurus*	*adsimilis*
Duck	African Black	*Anas*	*sparsa*
Duck	Maccoa	*Oxyura*	*maccoa*
Duck	Yellow-billed	*Anas*	*undulata*
Eagle	Martial	*Polemaetus*	*bellicosus*
Eagle	Verreaux's	*Aquila*	*verreauxii*
Eagle-Owl	Spotted	*Bubo*	*africanus*
Egret	Great	*Ardea*	*alba*
Egret	Intermediate	*Ardea*	*intermedia*
Egret	Western Cattle	*Bubulcus*	*ibis*
Falcon	Amur	*Falco*	*amurensis*
Falcon	Lanner	*Falco*	*biarmicus*
Finch	Red-headed	*Amadina*	*erythrocephala*
Firefinch	African	*Lagonosticta*	*rubricata*
Fiscal	Southern	*Lanius*	*collaris*
Flufftail	Red-chested	*Sarothrura*	*rufa*
Flycatcher	African Dusky	*Muscicapa*	*adusta*
Flycatcher	African Paradise	*Terpsiphone*	*viridis*
Flycatcher	Fairy	*Stenostira*	*scita*
Flycatcher	Fiscal	*Melaenornis*	*silens*
Flycatcher	Southern Black	*Melaenornis*	*pammelaina*
Francolin	Red-winged	*Scleroptila*	*levaillantii*
Francolin	Shelley's	*Scleroptila*	*shelleyi*
Goose	Egyptian	*Alopochen*	*aegyptiaca*
Goose	Spur-winged	*Plectropterus*	*gambensis*
Grassbird	Cape	*Sphenoeacus*	*afer*
Grebe	Little	*Tachybaptus*	*ruficollis*

Guineafowl	Helmeted	*Numida*	*meleagris*
Harrier-Hawk	African	*Polyboroides*	*typus*
Heron	Black-headed	*Ardea*	*melanocephala*
Heron	Grey	*Ardea*	*cinerea*
Heron	Purple	*Ardea*	*purpurea*
Honeyguide	Lesser	*Indicator*	*minor*
Hoopoe	African	*Upupa*	*africana*
Hornbill	Southern Ground	*Bucorvus*	*leadbeateri*
House Martin	Common	*Delichon*	*urbicum*
Ibis	African Sacred	*Threskiornis*	*aethiopicus*
Ibis	Hadada	*Bostrychia*	*hagedash*
Ibis	Southern Bald	*Geronticus*	*calvus*
Indigobird	Dusky	*Vidua*	*funerea*
Kingfisher	Brown-hooded	*Halcyon*	*albiventris*
Kingfisher	Giant	*Megaceryle*	*maxima*
Kingfisher	Half-collared	*Alcedo*	*semitorquata*
Kingfisher	Malachite	*Corythornis*	*cristatus*
Kingfisher	Pied	*Ceryle*	*rudis*
Kite	Black-winged	*Elanus*	*caeruleus*
Kite	Yellow-billed	*Milvus*	*aegyptius*
Lapwing	African Wattled	*Vanellus*	*senegallus*
Lapwing	Blacksmith	*Vanellus*	*armatus*
Lapwing	Crowned	*Vanellus*	*coronatus*
Lark	Eastern Long-billed	*Certhilauda*	*semitorquata*
Lark	Rufous-naped	*Mirafra*	*africana*
Longclaw	Cape	*Macronyx*	*capensis*
Martin	Banded	*Neophedina*	*cincta*
Martin	Brown-throated	*Riparia*	*paludicola*
Martin	Rock	*Ptyonoprogne*	*fuligula*
Moorhen	Common	*Gallinula*	*chloropus*
Mousebird	Red-faced	*Urocolius*	*indicus*
Mousebird	Speckled	*Colius*	*striatus*
Myna	Common	*Acridotheres*	*tristis*
Nightjar	Fiery-necked	*Caprimulgus*	*pectoralis*
Oriole	Black-headed	*Oriolus*	*larvatus*
Pigeon	African Olive	*Columba*	*arquatrix*
Pigeon	Speckled	*Columba*	*guinea*
Pipit	African	*Anthus*	*cinnamomeus*
Pipit	African Rock	*Anthus*	*crenatus*
Pipit	Buffy	*Anthus*	*vaalensis*
Pipit	Nicholson's	*Anthus*	*nicholsoni*
Pipit	Plain-backed	*Anthus*	*leucophrys*
Plover	Three-banded	*Charadrius*	*tricollaris*
Prinia	Drakensberg	*Prinia*	*hypoxantha*
Prinia	Tawny-flanked	*Prinia*	*subflava*
Puffback	Black-backed	*Dryoscopus*	*cubla*

Quail	Common	*Coturnix*	*coturnix*
Quelea	Red-billed	*Quelea*	*quelea*
Red Bishop	Southern	*Euplectes*	*orix*
Robin-Chat	Cape	*Cossypha*	*caffra*
Robin-Chat	Chorister	*Cossypha*	*dichroa*
Rock-Thrush	Cape	*Monticola*	*rupestris*
Rock-Thrush	Sentinel	*Monticola*	*explorator*
Saw-wing	Black	*Psalidoprocne*	*pristoptera*
Scimitarbill	Common	*Rhinopomastus*	*cyanomelas*
Scrub Robin	White-browed	*Cercotrichas*	*leucophrys*
Seedeater	Streaky-headed	*Crithagra*	*gularis*
Shelduck	South African	*Tadorna*	*cana*
Shrike	Red-backed	*Lanius*	*collurio*
Snake Eagle	Black-chested	*Circaetus*	*pectoralis*
Snipe	African	*Gallinago*	*nigripennis*
Sparrow	Cape	*Passer*	*melanurus*
Sparrow	House	*Passer*	*domesticus*
Sparrow	Southern Grey-headed	*Passer*	*diffusus*
Sparrow	Yellow-throated Bush	*Gymnoris*	*superciliaris*
Sparrowhawk	Black	*Accipiter*	*melanoleucus*
Spoonbill	African	*Platalea*	*alba*
Spurfowl	Natal	*Pternistis*	*natalensis*
Spurfowl	Swainson's	*Pternistis*	*swainsonii*
Starling	Cape	*Lamprotornis*	*nitens*
Starling	Pied	*Lamprotornis*	*bicolor*
Starling	Red-winged	*Onychognathus*	*morio*
Starling	Violet-backed	*Cinnyricinclus*	*leucogaster*
Starling	Wattled	*Creatophora*	*cinerea*
Stonechat	African	*Saxicola*	*torquatus*
Stork	Black	*Ciconia*	*nigra*
Stork	White	*Ciconia*	*ciconia*
Sugarbird	Gurney's	*Promerops*	*gurneyi*
Sunbird	Amethyst	*Chalcomitra*	*amethystina*
Sunbird	Greater Double-collared	*Cinnyris*	*afer*
Sunbird	Malachite	*Nectarinia*	*famosa*
Sunbird	Southern Double-collared	*Cinnyris*	*chalybeus*
Sunbird	White-bellied	*Cinnyris*	*talatala*
Swallow	Barn	*Hirundo*	*rustica*
Swallow	Greater Striped	*Cecropis*	*cucullata*
Swallow	Lesser Striped	*Cecropis*	*abyssinica*
Swallow	South African Cliff	*Petrochelidon*	*spilodera*
Swallow	White-throated	*Hirundo*	*albigularis*
Swift	African Black	*Apus*	*barbatus*
Swift	African Palm	*Cypsiurus*	*parvus*
Swift	Alpine	*Tachymarptis*	*melba*

Swift	Common	*Apus*	*apus*
Swift	Horus	*Apus*	*horus*
Swift	Little	*Apus*	*affinis*
Swift	White-rumped	*Apus*	*caffer*
Tchagra	Black-crowned	*Tchagra*	*senegalus*
Teal	Blue-billed	*Anas*	*hottentota*
Teal	Red-billed	*Anas*	*erythrorhyncha*
Tern	White-winged	*Chlidonias*	*leucopterus*
Thick-knee	Spotted	*Burhinus*	*capensis*
Thrush	Groundscraper	*Turdus*	*litsitsirupa*
Thrush	Kurrichane	*Turdus*	*libonyana*
Thrush	Olive	*Turdus*	*olivaceus*
Tit	Southern Black	*Melaniparus*	*niger*
Wagtail	Cape	*Motacilla*	*capensis*
Warbler	Barratt's	*Bradypterus*	*barratti*
Warbler	Lesser Swamp	*Acrocephalus*	*gracilirostris*
Warbler	Willow	*Phylloscopus*	*trochilus*
Warbler	Yellow-throated Woodland	*Phylloscopus*	*ruficapilla*
Waxbill	Blue	*Uraeginthus*	*angolensis*
Waxbill	Common	*Estrilda*	*astrild*
Waxbill	Orange-breasted	*Amandava*	*subflava*
Waxbill	Swee	*Coccopygia*	*melanotis*
Weaver	Cape	*Ploceus*	*capensis*
Weaver	Southern Masked	*Ploceus*	*velatus*
Weaver	Village	*Ploceus*	*cucullatus*
White-eye	Cape	*Zosterops*	*virens*
Whydah	Pin-tailed	*Vidua*	*macroura*
Widowbird	Fan-tailed	*Euplectes*	*axillaris*
Widowbird	Long-tailed	*Euplectes*	*progne*
Widowbird	Red-collared	*Euplectes*	*ardens*
Widowbird	White-winged	*Euplectes*	*albonotatus*
Wood Hoopoe	Green	*Phoeniculus*	*purpureus*
Woodpecker	Cardinal	*Dendropicos*	*fuscescens*
Woodpecker	Golden-tailed	*Campethera*	*abingoni*
Woodpecker	Olive	*Dendropicos*	*griseocephalus*
Wryneck	Red-throated	*Jynx*	*ruficollis*
Yellow Warbler	African	*Iduna*	*natalensis*

Appendix E

Notes of a management meeting for Kiepersol Protected Environment held on 18 February 2025

Present: John, Debbie and Gert

Apologies: None

Minutes from the meeting:

- The management plan was discussed and actions highlighted together with the annual plan of operation for 2025/2026
- It was agreed that the management plan is complete and will be submitted to the authorities for further processing
- The attendees agreed that an area of 10 hectares will be cleared each year of invasive species with Black Wattle and Silver Wattle being the 2 most important species to eradicate
- The zonation plan was finalised and all attendees agreed to the zonation plan that was presented
- The stocking rate was confirmed with the agreement to minimise cattle numbers for the benefit of wildlife
- Gert will assist with the fire management by working together with the Fire Protection Association

Table 6. Progress and goals set for Kiepersol Protected Environment (Annual Plan of Operation)

Management Target	2025/2026 Progress	2026/2027 Goals	2027/2028 Goals	Completion Date	Responsibility	Action
Fire Management						
• Well maintained, healthy grassland with high biodiversity • Prevention of damage to ecosystem and assets in the protected environment • Legal compliance and compliance with SANBI's burning guidelines	Patrols and burn according to management plan	Patrols and burn according to management plan	Patrols and burn according to management plan	Ongoing	Normandien Fire Protection Association	Fire team
Invasive Plant Control						
• Healthier ecosystem – biodiversity, sediment and nutrient balance • Ensure that areas previously invaded with vegetation are not vulnerable to erosion	Remove 10 hectares of invasive vegetation per year	Remove 10 hectares of invasive vegetation per year	Remove 10 hectares of invasive vegetation per year	Ongoing	Landowners and Ezemvelo KZN Wildlife	Invasive plant eradication team

Management Target	2025/2026 Progress	2026/2027 Goals	2027/2028 Goals	Completion Date	Responsibility	Action
Conservation Management						
Accept responsibility for the perpetual custody of: • Northern KZN Moist Grassland on the Kiepersol Protected Environment • Low Escarpment Moist Grassland • Eastern Mistbelt Forests • The natural water resources found on the nature reserve	Ensure that the management plan is successfully implemented	Ensure that the management plan is successfully implemented	Ensure that the management plan is successfully implemented	Ongoing	Landowners	All people involved with the Kiepersol Protected Environment
Soil erosion						
• Prevention of excessive sediment generation and loss of nutrients • Maintenance of good grazing for cattle • Maintenance of healthy grass species • Maintain stability of slopes	Implement burning and grazing plans are specified in the management plan, ensure road maintenance and storm water infrastructure is effective	Implement burning and grazing plans are specified in the management plan, ensure road maintenance and storm water infrastructure is effective	Implement burning and grazing plans are specified in the management plan, ensure road maintenance and storm water infrastructure is effective	Ongoing	Landowners	Grazing management and road maintenance and all staff members

Management Target	2025/2026 Progress	2026/2027 Goals	2027/2028 Goals	Completion Date	Responsibility	Action
Road/trail maintenance						
Maintain and create access roads	Ensure that access roads are maintained and do not lead to erosion	Ensure that access roads are maintained and do not lead to erosion	Ensure that access roads are maintained and do not lead to erosion	Ongoing	Landowners	Maintenance
Socio-economic contribution						
• Maintain the protected environment for biodiversity conservation actions for future generations • Develop a sense of appreciation and responsibility for nature and ecosystem services with local community members (with good relationships) for long-term sustainable for the area and neighbouring areas • Development of the local economy by viable economic activities in the rural area	Encourage people to take part in conservation management projects in the area	Encourage people to take part in conservation management projects in the area	Encourage people to take part in conservation management projects in the area	Ongoing	Management authority	Maintenance

Management Target	2025/2026 Progress	2026/2027 Goals	2027/2028 Goals	Completion Date	Responsibility	Action
Contribution to Scientific Research						
• Long-term contribution to zoological, botanical and ecosystem knowledge • Knowledge sharing on other conservation projects	Allow research to take place if and when requested	Allow research to take place if and when requested	Allow research to take place if and when requested	Ongoing	Management authority	Research