agriculture, rural development,
land & environmental affairs
MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

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Departement van Landbou, Landelike Ontwikkeling, Grond en Ongewing Sake

umNyango weZelimo UkuThuthukiswa kweeNdawo zemaKhaya, iNarha neeNdaba zeBhoduluko

Ref: EA/Biodiversity/Bambanani PE/16-05-2024
Enquiries: P.N. Ntuli
Tel: 013 766 6335

TO : **MR C.M. CHUNDA**
HEAD: AGRICULTURE, RURAL DEVELOPMENT, LAND AND ENVIRONMENTAL AFFAIRS

FROM : **MS P.N. NTULI**
CHIEF DIRECTOR: ENVIRONMENTAL AFFAIRS

SUBJECT: **MOTIVATION FOR THE APPROVAL OF THE MIDDLEPUNT NATURE RESERVE MANAGEMENT PALAN.**

1. PURPOSE

To provide for a brief overview and seek MEC's approval of the Management Plan for the Middelpunt Nature Reserve ("**MNR**") .

2. BACKGROUND

The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (the "**Act**") makes provision for the declaration of various types of protected areas, including nature reserves.

Following the declaration of a nature reserve, the MEC must assign a management authority for the nature reserve. The management authority in turn is required to submit a management plan to the MEC for approval.

MOTIVATION FOR THE APPROVAL OF THE MIDDLEPUNT NATURE RESERVE MANAGEMENT PALAN.

3. DISCUSSION

The MNR is located within the Emakhazeni local municipality, in the vicinity of Dullstroom (Figure 1).

The MNR was declared on the 14th October 2022 (Mpumalanga Provincial Gazette 3449, Notice No. 211). The MNR comprises of two properties, of which one property is owned by Dullstroom Trout Farms (Pty) Ltd and the second property is owned by Dresden Property Investment (Pty) Ltd. The landowners have been assigned as the management authority for the MNR.

In terms of Section 39 (2) of the Act, the management authority assigned for a nature reserve must, within 12 months of the assignment, submit a management plan for the protected area to the MEC for approval.

The assigned management authority has assented to the attached management plan for the MNR on the 11th March 2024 and the CEO of the MTPA has endorsed the management plan on the 18th March 2024.

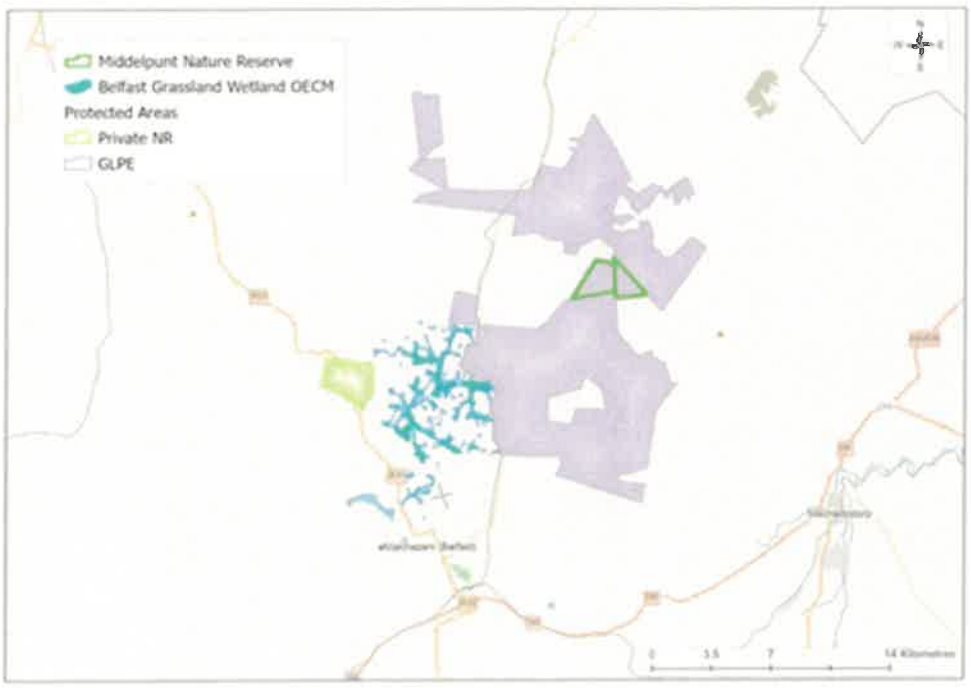

Figure 1).

MOTIVATION FOR THE APPROVAL OF THE MIDDLEPUNT NATURE RESERVE MANAGEMENT PALAN.

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4. IMPLICATIONS

4.1 Organisational and Human Resources

None. The management authority for the MNR is assigned to the landowners and the landowners are responsible for the management of the MNR.

4.2 Financial

None. The management authority for the MNR is assigned to the landowners and the landowners are responsible for all costs associated with the management of the nature reserve. There are no costs to be incurred by the MTPA.

4.3 Legal

In terms of Section 39 (2) of the National Environmental Management: Protected Areas Act , 57 of 2003, the management authority assigned for a nature reserve must within 12 months of the assignment submit a management plan for the protected area to the MEC for approval.

4.4 Communications

N/A

5. OTHER BODIES/INSTITUTIONS CONSULTED

Extensive consultation has been held with the landowners and Birdlife South Africa as well as the Middelpunt Wetland Trust in the development of the MNR management plan. In addition, copies of the MNR management plan were provided to various stakeholders for comment and inputs as indicated on page 13 of the attached management plan.

6. RISKS, BENEFITS AND POSSIBLE LIABILITIES

6.1 Risks and Liabilities

There are no immediate risks and liabilities associated with the approval of the management plan.

6.2 Benefits

The approval of the management plan will ensure compliance with the provisions of the Act and will provide for the effective management of the MNR.

MOTIVATION FOR THE APPROVAL OF THE MIDDLEPUNT NATURE RESERVE MANAGEMENT PALAN.

The MTPA works in close collaboration with the management authority of the MNR and the management plan clearly spells out the management objectives for this critically important site and Ramsar designated wetland of international significance.

7. RECOMMENDATIONS

It is recommended that the MEC approves the management plan for the Middelpunt Nature Reserve. The copy of the management plan is attached and the MEC is requested to approve the management plan by signing off on page (ii) of the management plan.

Ms P.N. NTULI
CHIEF DIRECTOR: ENVIRONMENTAL AFFAIRS
DATE: 27/05/2004

APPROVED / ~~NOT APPROVED~~

MR C.M. CHUNDA
HEAD: AGRICULTURE, RURAL DEVELOPMENT,
LAND AND ENVIRONMENTAL AFFAIRS
DATE: 27/5/04

MPUMALANGA
THE PLACE OF THE RISING SUN

Mpumalanga
TOURISM AND PARKS AGENCY
An Entity of the Department of Economic Development and Tourism

OFFICE OF THE MTPA BOARD

BY HAND

The Honorable MEC: Ms. Busisiwe Paulina Shiba
Agriculture, Rural Development, Land and Environmental Affairs
Riverside Government Complex
Building 6
Nelspruit

SUBJECT: MOTIVATION FOR THE APPROVAL OF THE MIDDELPUNT NATURE RESERVE MANAGEMENT PLAN BY THE MEC:DARDLEA

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1. PURPOSE

The matter for consideration is the approval of the management plan for the Middelpunt Nature Reserve ("**MNR**") by the MEC:DARDLEA.

2. BACKGROUND

The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (the **"Act"**) makes provision for the declaration of various types of protected areas, including nature reserves.

Following the declaration of a nature reserve, the MEC must assign a management authority for the nature reserve. The management authority in turn is required to submit a management plan to the MEC for approval.

3. DISCUSSION

The MNR is located within the Emakhazeni local municipality, in the vicinity of Dullstroom (Figure 1).

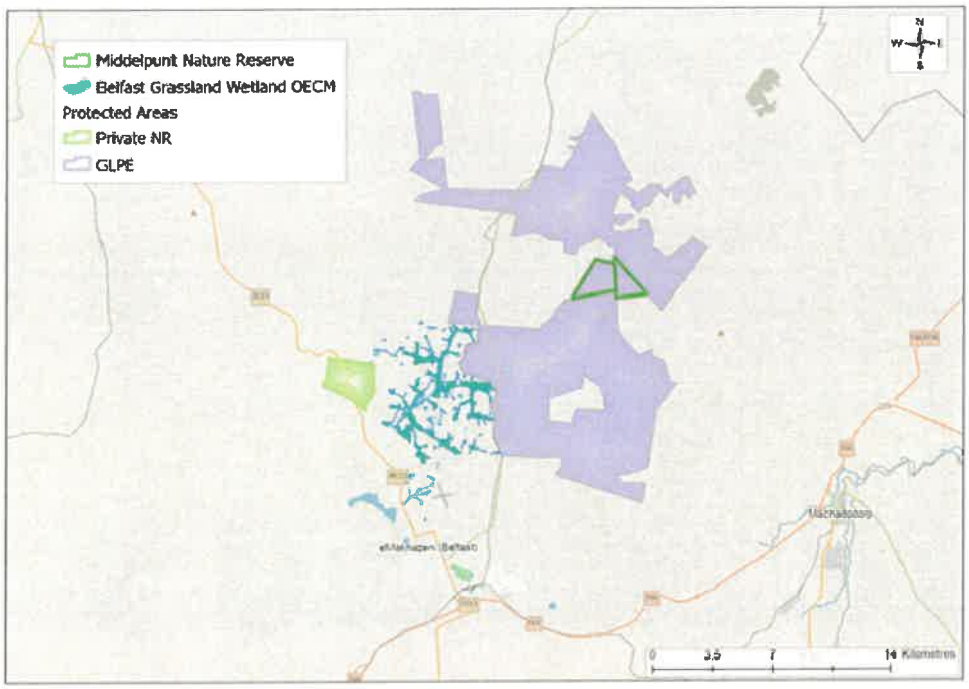

Figure 1: Location of the MNR

The MNR was declared on the 14th October 2022 (Mpumalanga Provincial Gazette 3449, Notice No. 211). The MNR comprises of two properties, of which one property is owned by Dullstroom Trout Farms (Pty) Ltd and the second property is owned by Dresden Property Investment (Pty) Ltd. The landowners have been assigned as the management authority for the MNR.

In terms of Section 39 (2) of the Act, the management authority assigned for a nature reserve must, within 12 months of the assignment, submit a management plan for the protected area to the MEC for approval.

The assigned management authority has assented to the attached management plan for the MNR on the 11th March 2024 and the CEO of the MTPA has endorsed the management plan on the 18th March 2024.

4. IMPLICATIONS

4.1 Organisational and Human Resources

None. The management authority for the MNR is assigned to the landowners and the landowners are responsible for the management of the MNR.

4.2 Financial

None. The management authority for the MNR is assigned to the landowners and the landowners are responsible for all costs associated with the management of the nature reserve. There are no costs to be incurred by the MTPA.

4.3 Legal

In terms of Section 39 (2) of the National Environmental Management: Protected Areas Act , 57 of 2003, the management authority assigned for a nature reserve must within 12 months of the assignment submit a management plan for the protected area to the MEC for approval.

4.4 Communications

N/A

5. OTHER BODIES/INSTITUTIONS CONSULTED

Extensive consultation has been held with the landowners and Birdlife South Africa as well as the Middelpunt Wetland Trust in the development of the MNR management plan. In addition, copies of the MNR management plan were provided to various stakeholders for comment and inputs as indicated on page 13 of the attached management plan.

6. RISKS, BENEFITS AND POSSIBLE LIABILITIES

6.1 Risks and Liabilities

There are no immediate risks and liabilities associated with the approval of the management plan.

6.2 Benefits

The approval of the management plan will ensure compliance with the provisions of the Act and will provide for the effective management of the MNR.

The MTPA works in close collaboration with the management authority of the MNR and the management plan clearly spells out the management objectives for this critically important site and Ramsar designated wetland of international significance.

7. RECOMMENDATIONS

It is recommended that the MEC:DARDLEA approves the management plan for the Middelpunt Nature Reserve.

The copy of the management plan is attached and the MEC is requested to approve the management plan by signing off on page (ii) of the management plan.

Submitted by:

Mr. V. Mashego
Board Chairperson
MTPA

25 April 2024.
Date

Approved:

Ms. B.P. Shiba (MPL)
MEC
Agriculture, Rural Development,
Land and Environmental Affairs

28 MAY 2024
Date

Middelpunt Nature Reserve
Integrated Management Plan

Dullstroom TROUT FARM

Eland's Valley DULLSTROOM

BirdLife SOUTH AFRICA
Giving Conservation Wings

Middelpunt Wetland Trust

Mpumalanga TOURISM AND PARKS AGENCY

MANAGEMENT PLAN APPROVAL PROCESS

Herewith the integrated management plan for Middelpunt Nature Reserve as compiled by the appointed management authority, Middelpunt Nature Reserve Landowners Association, co-management parties, BirdLife South Africa and Middelpunt Wetland Trust, and the Mpumalanga Tourism and Parks Agency.

Confirmation by Middelpunt Nature Reserve Landowners Association

Name and Title	Signature and Date
Dullstroom Trout Farm (Pty) Limited	11 March 2024
Dresden Property Investments (Pty) Limited T/A Elands Valley	11 March 2024

Recommended by the Protected Areas Expansion and Biodiversity Stewardship Manager

Name	Signature and Date
B.E. Morris	13 March 2024

Endorsed/adopted by the MTPA CEO

Name	Signature and Date
M.H. Vilakazi	18 March 2024

Approved by the Member of the Executive Council: DARDLEA

Name	Signature and Date
B.P. Shiba	28 MAY 2024

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ABBREVIATIONS

AEWA	Agreement on the Conservation of African-Eurasian Migratory Waterbirds
APO	Annual Plan of Operation
CARA	Conservation of Agricultural Resources Act
CBA	Critical Biodiversity Area
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CR	Critically Endangered
CREW	Custodians of Rare and Endangered Wildflowers
DEA	Department of Environmental Affairs
DFFE	Department of Forestry, Fisheries and the Environment
EMP	Environmental Management Plan
EN	Endangered
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Priority Area
FPA	Fire Protection Association
FRP	Fire Response Plan
GIS	Geographical Information System
GLPE	Greater Lakenvlei Protected Environment
GLPELA	Greater Lakenvlei Protected Environment Landowners Association
ISSAP	International Single Species Action Plan
KPA	Key Performance Area
LC	Least Concern
LSU	Large stock units
LT	Least Threatened
MA	Management Authority
MBSP	Mpumalanga Biodiversity Sector Plan
MEC	Member of the Executive Council
MNR	Middelpunt Nature Reserve
MNRLA	The Middelpunt Nature Reserve Landowners Association
MOU	Memorandum of Understanding

MPAES	Mpumalanga Protected Area Expansion Strategy
MTPA	Mpumalanga Tourism and Parks Agency
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NEMPAA	National Environmental Management: Protected Areas Act
NFEPA	National Freshwater Ecosystem Priority Area
NGO	Non-governmental Organisation
NPAES	National Protected Area Expansion Strategy
NR	Nature Reserve
NVFFA	National Veld and Forest Fire Act
PA	Protected Area
PAFPA	Platorand Area Fire Protection Association
SAHRA	South African Heritage Resources Agency
SAPS	South African Police Service
VU	Vulnerable
WWF IWG	White-winged Flufftail International Working Group

1. INTRODUCTION AND STRATEGIC MANAGEMENT FRAMEWORK

1.1 Requirement for the Plan

A conservation management plan is a legal requirement (National Environmental Management: Protected Areas Act No. 57 of 2003) which aims to ensure the protection, conservation, and management of protected areas in accordance with the objectives of this Act. A management plan for a protected area is a strategic and practical document, which provides the framework for the development and operation of the site. It informs management at all levels, including landowners, the management authority, and environmental authorities across all spheres of government.

Specifically, the purpose of the management plan is to:

- Provide the primary strategic tool for management of the protected area.
- Justify the need for specific programmes and operational procedures.
- Provide for future thinking and continuity of management.
- Enable the Management Authority to develop and manage the protected area in a way that protects its values and the purpose for which it was established.

1.2 Structure of the Plan

Table 1 The structure and content of the Management Plan sections.

Section 1:	Introduction and Strategic Management Framework of Middelpunt Nature Reserve
Section 2:	Description of Middelpunt Nature Reserve
Section 3:	Zonation Plan of Middelpunt Nature Reserve
Section 4:	Administrative Structure of Middelpunt Nature Reserve
Section 5:	Management Plan Implementation, Review and Annual Plan of Operation for Middelpunt Nature Reserve
Section 6:	Appendices

1.3 Adaptive Management

This management plan is based on the concept and guiding principles of adaptive management. This is a structured and iterative process (Figure 1). The aim is to ensure decisions are based on the best available information which can be achieved by monitoring performance. By doing so, unexpected changes can be detected, and the management plan adapted accordingly. Management therefore remains relevant and effective.

Adaptive management enables landowners and managers to:

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

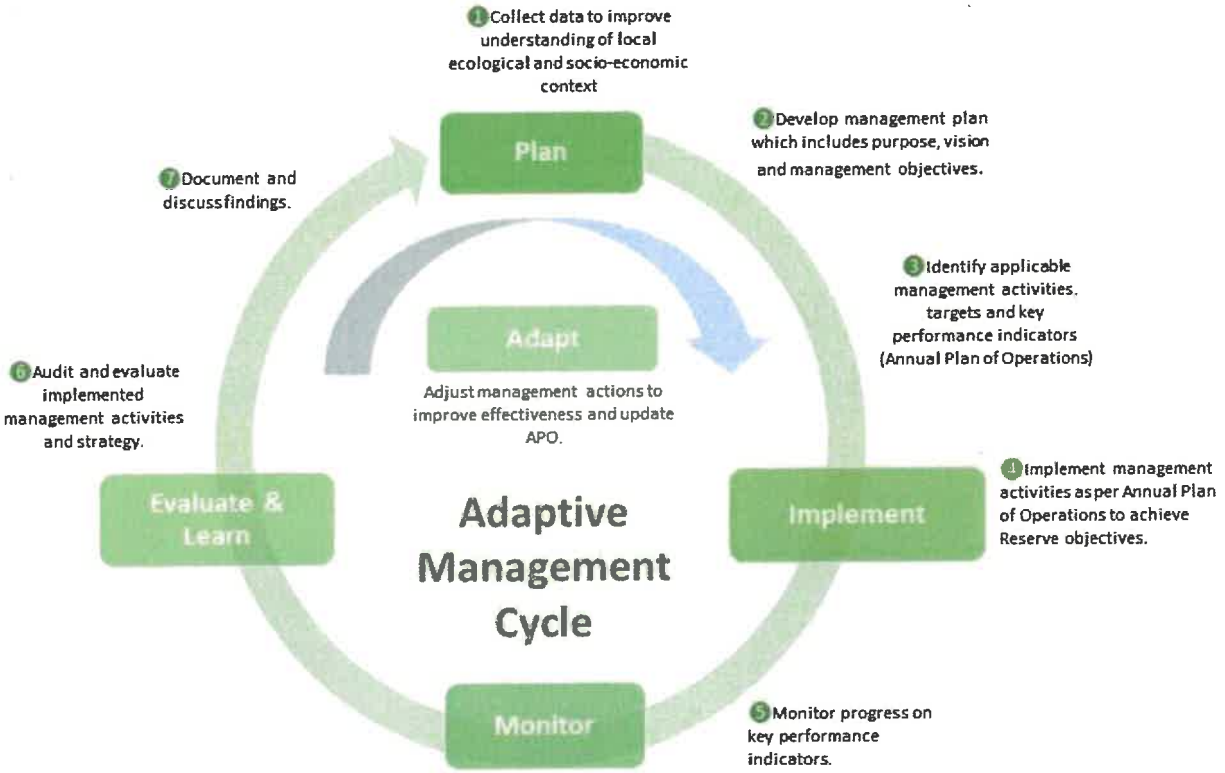

Figure 1 The adaptive management cycle.

1.4 Background

The White-winged Flufftail (*Sarothrura ayresi*) is listed as Critically Endangered, with an estimated global population size of fewer than 250 mature individuals. It is one of the rarest and most threatened waterbird species in Africa. Ethiopia and, more recently, South Africa are the only two countries where the White-winged Flufftail is known to breed, with only one confirmed site in South Africa: Middelpunt Wetland. The White-winged Flufftail was first seen at Middelpunt Wetland in 1992 after many years with no presence records in the country. Those who saw the bird were concerned about the condition of the wetland and engaged with the owner at the time to rehabilitate and conserve it. A lease was eventually signed in 1994 and Middelpunt Wetland Trust was formed as the vehicle through which to operate. The Trust succeeded in having five kilometres of artificial drainage channels filled in 1995. In 2002, Dullstroom Trout Farm purchased the farm portion that contains most of Middelpunt Wetland to protect the main catchment area for their trout dams directly downstream of the wetland, and to safeguard the White-winged Flufftail and its habitat. BirdLife South Africa was invited to administer Middelpunt Wetland Trust in 2012 and has since led national efforts to conserve this highly threatened species. Dullstroom Trout Farm and Eland's Valley Guest Farm have been supportive of BirdLife South Africa's research objectives by allowing studies to take place at Middelpunt Wetland. It is through these studies that the first breeding record of the White-winged Flufftail was made in South Africa during the summer of 2018/2019. The landowners joined the Greater Lakenvlei Protected Environment in 2017. Whilst this form of protection limits activities that could threaten biodiversity, it does not prevent them entirely. Middelpunt Wetland is the only confirmed breeding site of the White-winged Flufftail in the southern hemisphere and thus requires the appropriate legislation to safeguard this irreplaceable habitat for many years to come.

South Africa is a contracting party to the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA). Under both treaties, the White-winged Flufftail receives the highest level of protection. In 2008, the International Single Species Action Plan (ISSAP) for the White-winged Flufftail was adopted. BirdLife South Africa was instrumental in assisting the Department of Forestry, Fisheries, and the Environment (DFFE) in coordinating the third AEWA White-winged Flufftail International Working Group (WWF IWG) meeting held in Dullstroom, South Africa in November 2019. At this meeting, it was decided that more formal protection was needed for Middelpunt Wetland to prevent the species from becoming extinct from external threats. The declaration process for MNR was initiated in early 2021 with the notice of proclamation appearing in the Mpumalanga Provincial Government Gazette on 14 October 2022 (Mpu. Prov. Gazette No. 3449, Notice 211).

Middelpunt Nature Reserve is not only an important site for White-winged Flufftail but provides habitat to a diversity of floral and faunal species. This nearly 10,000-year-old, peat-based wetland provides benefits to the surrounding Lakenvlei farming community through water retention, purification, and flood attenuation as well as the global community through carbon sequestration (peat accumulation rate of 0.36 mm/year). These factors lead to the designation of Middelpunt Nature Reserve as a wetland of international important on 15 March 2023 under the Convention on Wetlands (Iran, Ramsar, 1971). Middelpunt Nature Reserve met five of the Ramsar criteria, namely Criterion 1 (representative, rare, or unique natural or near-natural wetland types), Criterion 2 (rare species and threatened ecological communities), Criterion 3 (biological diversity), Criterion 4 (support during critical life cycle stage or in adverse conditions), and Criterion 6 (>1% waterbird population). The

reserve has become a bastion of nature conservation in South Africa and the world for many years to come.

1.5 Key Values

Values of a site are primarily those remarkable attributes that led to it being identified as a priority for the Mpumalanga Biodiversity Stewardship Programme and Protected Areas Expansion Strategy. The values are important in planning and management and are the features of the site that must be protected.

The values of Middelpunt Nature Reserve are summarised as follows:

1. Biodiversity conservation values:
    - The ecosystems that are protected by the nature reserve meet the objectives of the Mpumalanga Protected Area Expansion Strategy (MPAES). This 20-year strategy (2009-2028), led by Mpumalanga Tourism and Parks Agency (MTPA), identifies spatial priorities for protected area expansion at the provincial and national level.
    - The vegetation type comprises Steenkampsberg Montane Grassland, which is categorised as poorly protected within the province and falls within the Dullstroom Plateau Grasslands, an Endangered Ecosystem, as listed in terms of section 52 of the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) in the National List of Ecosystems that are 'Threatened' and 'In Need of Protection' (gazetted in Government Notice No. 1002 in Government Gazette 34809 of 9 December 2011). This ecosystem type was listed under Criterion F (Priority areas for meeting explicit biodiversity targets as defined in a systematic biodiversity plan) that has a high irreplaceability value and faces medium threats (Criterion 1 of Ramsar).
    - In terms of the 2014 Mpumalanga Biodiversity Sector Plan (MBSP), MNR falls within a Terrestrial Critical Biodiversity Area (CBA) with a rating of 'Irreplaceable', as well as a Freshwater Ecological Support Area (ESA) as a 'Wetland Cluster'. In accordance with the MBSP, areas ranked 'Irreplaceable' are the most important areas of the province from a biodiversity point of view, outside of the protected area network. Ideally, Conservation Management (Land-Use Type 1) should apply to all irreplaceable areas.
    - MNR falls within the Mpumalanga-Drakensberg Strategic Water Source Area and is identified as a National Freshwater Ecosystem Priority (NFEPA) Natural Wetland: Mesic Highveld Grassland (Criterion 1 of Ramsar).
    - The White-winged Flufftail (*Sarothrura ayresi*) is listed as globally Critically Endangered, with an estimated population size of fewer than 250 mature individuals. Middelpunt Wetland is the only confirmed breeding site for the species in South Africa and the southern hemisphere (Criteria 2, 3, 4, and 6 of Ramsar).
    - Other regionally threatened and endemic species found at the reserve include Vulnerable Blue Crane (*Anthropoides paradiseus*), Endangered Grey Crowned Crane (*Balearica regulorum*), Critically Endangered Wattled Crane, Vulnerable near-endemic Southern Bald Ibis (*Geronticus calvus*), endemic Yellow-breasted Pipit (*Anthus chloris*), Near-Threatened Denham's Bustard (*Neotis denhami*), Endangered Secretarybird (*Sagittarius serpentarius*), endemic Peat Borrowing Crab (*Potamonautes flavusjo*), endemic Verloren Valei Bronze-Speckled Widow (*Serradinga clarki amissivallis*,

formerly Clark's Lost Widow), Vulnerable White-bellied Korhaan, Vulnerable Lesser Jacana (Criteria 2 and 3 of Ramsar).

2. Ecosystem service values (Criterion 1 of Ramsar):
    - Forms an important link in the national protected area system that enables ecological connectivity and species movement across the landscape.
    - Provides natural grazing for livestock.
    - Provides water-related ecosystem services that benefit local communities and carbon sequestration-related ecosystem services that benefit the global community.
3. Socio-economic values:
    - Income generation and local employment through sustainable livestock production and tourism.
4. Research and education values:
    - Research of species and their habitats, thus contributing to knowledge about how these ecosystems function for conservation and management purposes.

1.6 Purpose

The purpose of the Nature Reserve is the foundation on which all future actions are based, and it is in line with the key ecological attributes of the reserve and the overall management philosophy of the management authority. According to Section 17 of the National Environmental Management: Protected Areas Act and the gazette notice for declaration (Government Gazette 3449, Notice 211 of 14 Oct 2022), MNR serves the following purposes:

1. Protect the ecological integrity and biological diversity associated with the Mesic Highveld Grassland Bioregion and more specifically the Steenkampsberg Montane Grassland.
2. Protect all known individuals of the Critically Endangered White-winged Flufftail and any other threatened and rare species present.
3. Protect the vulnerable and ecologically sensitive valley-bottom wetland, its lateral seeps, aquifers, and surrounding catchment.
4. Assist in ensuring the sustained supply of provisioning, regulating, supporting and cultural ecosystem goods and services provided by wetland and grassland habitats.
5. Provide for the sustainable use of natural and biological resources provided by the grassland and wetland.
6. Contribute to human, social, cultural, spiritual, and economic development where applicable.
7. Rehabilitate and restore degraded wetland and grassland ecosystems and promote the recovery of threatened species.

1.7 Vision

The vision statement below describes the desired long-term, over-arching outcome that is a result of the effective management of the reserve.

An ecologically sound Nature Reserve, preserving the natural characteristics of the unique environment and contributing towards habitat and species conservation.

1.8 Key Performance Areas (Protected Area Management Policy Framework)

An objective has been identified for each of MNR's Key Performance Areas, which relate to the important functions and activities necessary to protect, develop and manage it effectively. The objectives have then been developed into strategic or desired outcomes, means of implementation and measures of success.

In the Annual Plan of Operation (APO), the objectives below are prioritised in terms of importance and urgency and detailed management actions are described that will deliver the desired outcomes under each objective.

Table 2: Key Performance Areas, objectives, strategic outcomes, implementation and measures of Middelpunt Nature Reserve.

Key Performance Area (KPA)	Objective	Strategic Outcome	Implementation (Management Action)	Measure (Portfolio of Evidence)
Governance and institutional arrangements	Appropriate administrative and management structures are in place to ensure Middelpunt Nature Reserve is effectively and collaboratively protected and conserved.	The nature reserve has been legally declared, title deeds endorsed and the declaration gazetted with the correct property descriptions and the management authority is assigned.	All declaration documents submitted and up to date. Notarial Deed with title deed restrictions registered with the Notary and Surveyor General against the property.	Declaration gazette notice, Notarial endorsements, Management authority assignment by the MEC
		The Management Authority enters into a formal co-management agreement to enable the effective resourcing and management of MNR.	Adopting of a formal co-management agreement between the MNRLA, BirdLife South Africa and the Middelpunt Wetland Trust that enables the provision of support and effective management.	Co-management agreement
			An annual plan of operation (APO) is developed for the management of the reserve.	Annual plan of operation
			The costs associated with the APO must be identified and a budget developed for its implementation.	Annual budget
			An annual review of the management plan implementation must be undertaken and a report that complies with the provisions of NEMPAA on the achievement of the management objectives must be submitted to MTPA.	Annual report
		Administrative and oversight structures are established and maintained to enable cooperation between the Management Authority and management entities within MNR.	A minuted annual general meeting must be held for members of the MNRLA and any co-management parties. This includes planning and reviewing the APO, writing of the annual report, identifying the resources necessary to manage the reserve and sources of funding.	Meeting minutes
			Ensure lease contract agreements are in line with the Management Plan and are upheld by lessees.	Lease contract
		Consultative structures are established that ensure meaningful engagement between MNR, stakeholders and the neighbouring communities living around it.	A formalised approach must be developed to address communication and collaboration with surrounding landowners and protected areas.	Written communication records
		An information database is established that allows data to be collated and appropriately utilised to inform management decisions.	Maintenance of an information database for the reserve.	Online shared database

Key Performance Area (KPA)	Objective	Strategic Outcome	Implementation (Management Action)	Measure (Portfolio of Evidence)
Compliance	Comply with and enforce legislation pertaining to the protection, development, and management of Middelpunt Nature Reserve.	The boundaries of MNR are accurately known and any deviations from cadastral boundaries are addressed through formal agreements.	A process to determine the exact boundaries and to identify any deviations from them must be undertaken and if any deviations are identified, these must be addressed through formal agreements between the MNR and the neighbouring landowners.	Management plan
		All management activities within MNR are compliant with the provisions of NEMPAA, NEMA and MTPA.	MNRLA must undertake its management activities in accordance with its EMPR and any conditions prescribed in terms of NEMPAA. The MNRLA must compile an annual report on the implementation of the management plan and report on any deviations from the adopted APO.	Independent audits by MTPA and annual report
		A servitude register is developed for MNR.	A servitude register should be developed, which identifies all servitudes and rights of way and fully defines access into and use of the reserve.	Servitude register
		All infrastructure developments and use by staff and visitors is aligned with the MNR zonation plan and all micro-habitats and associated buffer zones are delineated.	Ensure any infrastructure developments and use by staff and visitors is aligned with the zonation plan. Ensure the delineation of micro-habitats and associated buffer zones including wetlands and rocky outcrops.	Zonation plan
		Adequate fire safety within MNR is ensured.	Membership must be maintained with the relevant Fire Protection Association.	Membership confirmation
			There must be adequate firefighting equipment available in the reserve.	Fire equipment list
			An emergency fire response plan must be in place to handle any unplanned fires.	Fire response plan
			Draw up Firebreak Agreements with neighbours and amend when necessary.	Lease contract
Regional Management	Explore opportunities to expand Middelpunt Nature Reserve and promote compatible land uses with other surrounding protected areas.	Collaboration between MNR and other protected areas for holistic catchment management.	Achieve improved management effectiveness and ecological functioning on a regional scale by exploring collaborative management options with the GLPE.	GLPELA annual general meeting register and participation in management plan reviews

Key Performance Area (KPA)	Objective	Strategic Outcome	Implementation (Management Action)	Measure (Portfolio of Evidence)
Financial viability	Support commercial ventures that are consistent with the purpose of Middelpunt Nature Reserve, which ensure its financial viability and sustainability, whilst managing and mitigating impacts.	Lease contracts are developed and upheld between MNR and lessees.	Developing and renewing lease contracts for livestock grazing and wetland conservation that are consistent with the purposes of the reserve.	Lease contracts
		Carbon and biodiversity credit options as offsets explored and sold where applicable.	Exploration of carbon and biodiversity credits for MNR.	Contracts
Reserve maintenance	Provide adequate human resources, equipment and infrastructure to enable the development and management of Middelpunt Nature Reserve.	There are sufficient facilities, infrastructure, and equipment to enable staff to effectively manage the reserve. This includes but is not limited to the wildlife-friendly fences, cattle fences, gates, dam wall and spillway, weir walls, service roads and vehicles.	Regular scheduled maintenance of all infrastructure and equipment must be undertaken without causing environmental harm.	Annual plan of operation
Law enforcement	Ensure adequate safety and security within Middelpunt Nature Reserve to combat illegal activities.	There is sufficient signage erected displaying the appropriate laws and policies.	Ensuring that appropriate laws and policies are communicated on the signage, that the signage is erected at strategic access points, and the signage is maintained and updated as required.	Signage
		There is adequate access control, security, and law enforcement within MNR.	Ensuring appropriate access to the reserve through an adequate boundary fence and designated access points.	Access rules
			Enforce applicable legislation to deter trespassing and illegal activities such as poaching, harvesting, cattle theft and unauthorised viewing of wetland birds. Cooperate with key partners and neighbours, including SAPS and the MTPA, in the prosecution of offenders caught committing an offence.	Report incidents
Ecological Management	Protect the ecosystem functioning and habitat of Middelpunt Nature Reserve to ensure its long-term ecological integrity and the maintenance of its species and habitats.	Critical ecological processes and functions are maintained within the reserve.	An integrated habitat management programme, which considers the effects of herbivory, fire, water resource management and impacts such as soil erosion must be developed.	Management plan review (five-year interval)
			A predictive understanding of the dynamics of the vegetation in relation to climate, soils, herbivory, and fire should be enabled through the implementation of monitoring that examines the effects of management and environment on vegetation composition and structure. Vegetation	Veld assessments (periodically)

Key Performance Area (KPA)	Objective	Strategic Outcome	Implementation (Management Action)	Measure (Portfolio of Evidence)
			management should be adapted if negative trends in composition, cover and structure, and the status of species are detected.	
		Fire management is undertaken based on ecological principles, the recommendations of studies undertaken for the site and the consideration of landscape-level issues.	Develop fire and burning management guidelines that take into consideration the protection of the wetland and veld types on the reserve. Fuel loads and the proportion of moribund grass should be evaluated before commencing with burns.	Management plan
			Burns must be annually recorded and mapped.	Remote-sensing map
			Peripheral and strategic internal firebreaks should be cleared as a high priority.	Remote-sensing map
		Areas that are impacted by cattle operations are identified, managed and, if necessary, rehabilitated.	Identify and classify areas of degradation caused by cattle.	Site survey map
			Develop and implement a rehabilitation plan for identified areas of degradation.	Annual plan of operation
			Develop a plan to maintain the appropriate cattle stocking densities appropriate for the Mesic Highveld Grassland Bioregion.	Management plan
		Water resource management is undertaken in a pragmatic manner that considers implications at a landscape-level.	Implementation of catchment management measures that maintain the integrity of the water resources and their ecological functions within and around the reserve. The catchment includes the wetlands, seeps and aquifers.	Management plan
			An inventory and map of natural water sources and existing artificial features including the status of each water point, should be maintained.	Management plan
			Monitor water quality and quantity for downstream community-based natural resource management.	Rainfall records and sample reports
		Invasive plant species control measures are implemented in the reserve in a planned and systematic manner.	Ongoing control and eradication of listed alien invasive species must be undertaken to a point where infestations are below 1% and maintenance control is all that is required.	Site survey map
			Actively monitor the densities and spread of indigenous invasive species on the reserve, especially pioneer species such as *Phragmites australis* and *Typha capensis* in the wetland.	Remote-sensing map
			Species lists must be developed and continuously updated for all plants and animals. Scientists and volunteer groups (e.g.,	Species lists

Key Performance Area (KPA)	Objective	Strategic Outcome	Implementation (Management Action)	Measure (Portfolio of Evidence)
		Efforts must be made to identify and document the species within the reserve, especially threatened and endemic species.	Custodians of Rare and Endangered Wildflowers (CREW) and Plant Specialist Group (PSG)) can assist with this task.	
			Presence of White-winged Flufftail at Middelpunt Wetland during the breeding season must be confirmed annually.	Annual survey
		Trout management is based on ecological principles and the recommendations of appropriate authorities.	Reports on trout numbers, stocking rates and species mix proportions.	Annual report
		Wildlife management is undertaken based on ecological and ethical principles and the recommendations of appropriate monitoring processes and studies.	Reports on ethical and legal hunting/culling of game and control of problem (e.g., Black-backed Jackal, Brown Hyena, otters) and feral (e.g., domestic pigs) animals.	Annual report
		Erosion control is undertaken by identifying areas that are susceptible to erosion and implementing measures to address human induced soil erosion.	Rehabilitation of soil erosion areas, including filling historical artificial excavations.	Annual plan of operation
Heritage management	Protect the sense of place, natural character, historic and cultural heritage of Middelpunt Nature Reserve.	The cultural, historical, and living heritage of the area is documented and safeguarded.	Establishing inventories of artefacts within the reserve and implementing appropriate measures to protect them should any be discovered.	Management plan
Education and Research	Raise awareness about Middelpunt Nature Reserve and better understand the ecology of species to inform conservation and management.	Encourage third party educational campaigns and research studies through collaboration.	Support awareness events and research proposals that do not jeopardise the purposes of the reserve.	Annual report

2. DESCRIPTION

2.1 Legislative basis for management of the Nature Reserve

There is a large body of legislation that is relevant to the management of protected areas. However, the primary legislation is the National Environmental Management: Protected Areas Act (No.57 of 2003). This will be referred to as "the Act".

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

In Mpumalanga, MTPA is the provincial conservation authority, and its Biodiversity Stewardship Programme facilitates the establishment and management of protected areas on private land.

A detailed list of relevant legislation is provided in Appendix A. Landowners should familiarize themselves with the purpose and contents of the statutes and their subsequent amendments and regulations.

2.1.1 Specific requirements of the Act (Section 41)

Section 41 of the Act specifies what must and may be included in a Management Plan.

Section 41(1) The object of a management plan is to ensure the protection, conservation and management of the protected area concerned in a manner which is consistent with the objectives of this Act and for the purpose it was declared.

Section 41(2) A management plan must contain at least:

(a) the terms and conditions of any applicable biodiversity management plan.
(b) a co-ordinated policy framework.
(c) such planning measures, controls and performance criteria as may be prescribed.
(d) a programme for the implementation of the plan and its costing.
(e) procedures for public participation, including participation by the owner (if applicable), any local community or other interested party;
(f) where appropriate, the implementation of community-based natural resource management; and
(g) a zoning of the area indicating what activities may take place in different sections of the area, and the conservation objectives of those sections.

Section 39 of the Act deals with the requirements to be met when preparing a Management Plan

Section 39(1) The Minister or the MEC may make an assignment in terms of section 38(1) or (2) only with the concurrence of the prospective management authority.

Section 39(2) The management authority assigned in terms of section 38(1) or (2) must, within 12 months of the assignment, submit a management plan for the protected area to the Minister or the MEC for approval.

Section 39(3) When preparing a management plan for a protected area, the management authority concerned must consult municipalities, other organs of state, local communities and other affected parties which have an interest in the area.

Section 39(4) A management plan must consider any applicable aspects of the integrated development plan of the municipality in which the protected area is situated.

2.1.2 Proclamation Status

Middelpunt Nature Reserve was proclaimed under Section 23 (1) of the National Environmental Management: Protected Areas Act (Act 57 of 2003) in 2022 (Mpumalanga Cape Provincial Gazette No. 3449, Notice 211). See Appendix B for a copy of Middelpunt Nature Reserve Proclamation Notice.

2.1.3 Invasive Species Control in terms of the Biodiversity Act

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

2.1.4 Public Participation Process

The MNR management plan was sent to the interested and affected parties on 15 August 2023 for review to address any concerns or recommendations before submitting to the provincial MEC for finalisation (Table 3). Stakeholders had one calendar month to submit comments.

Table 3: The list of interested and affected parties that were included in the public participation process.

Interested and affected party	Contact information
The Outpost Dullstroom, Middelpunt 320 JT portion 15	venue@theoutpostdullstroom.co.za
	outpost@theoutpostdullstroom.co.za
Middelpunt Farm, Middelpunt 320 JT portion 20	martiens@richmondexp.co.za
Louwtjie Visser, Elandsfontein 322 JT portion 1	louwtjievisser@gmail.com
Elandskloof Farm	info@elandskloof.co.za
Greater Lakenvlei Protected Environment Landowners Association	driehoek@dullstroom.net
	mwardern@mweb.co.za
Dullstroom Boerevereniging / Farmers Association	admin@dullstroombv.co.za
Emakhazeni Local Municipality	Mthimunyesibu@gmail.com
	madonselanoni@gmail.com (Dullstroom Office)
	municipality@emakhazenilm.co.za (eMakhazeni/Belfast Office)
Dullstroom Ratepayers Association	michaeljohn123ma@gmail.com
Transvaal Fly Fishing Club	chairman@tffc.co.za
Escarpment Bird Club	stevevincent@wildlifeimages.co.za
Verloren Valei Nature Reserve	mpserakwana@gmail.com
	patrick.serakwana@mtpa.co.za
De Berg Nature Reserve	marius.kruger@norplats.co.za
SAFCOL	cfoster@safcol.co.za
Mpumalanga Escarpment Platorand Fire Protection Association	marijoubert7@gmail.com
	jjay@dffe.gov.za

Department of Forestry, Fisheries and the Environment (DFFE) Ramsar	stanleyt@dffe.gov.za
DFFE White-winged Flufftail National Working Group	hmafumo@dffe.gov.za
	tmashua@dffe.gov.za
Mpumalanga Tourism and Parks Agency	jannie@loskopnaturereserve.co.za
	frans.krige@mtpa.co.za
	hannes.marais@mtpa.co.za
	brian.morris@mtpa.co.za
	mervyn.lotter@mtpa.co.za
Middelpunt Wetland Trust	malcolm.drummond46@gmail.com
BirdLife South Africa	melissa.lewis@birdlife.org.za
	kirsten.day@birdlife.org.za
Eskom	mongalgg@eskom.co.za
	ZunguJ@eskom.co.za
	NgobenBT@eskom.co.za
	ChaukeTA@eskom.co.za
	KuahoP@eskom.co.za
	NgweziMG@eskom.co.za
	MathibAL@eskom.co.za
	NekhahTT@eskom.co.za

2.2 Regional and Local Planning

The original National Protected Area Expansion Strategy (NPAES, 2008) was updated in 2016. It is a 20-year strategy that should ideally be updated every 5 years. The NPAES calls on provinces to develop implementation plans in support of (i) the NPAES and (ii) provincial conservation efforts and priorities. The NPAES provides a broad national framework for Protected Area expansion in South Africa. It also identifies (i) areas of importance to be targeted for Protected Area expansion and (ii) mechanisms to achieve this (Balfour, 2016).

The MTPA has developed the Mpumalanga Protected Area Expansion Strategy (MPAES; 2009) to inform the DEA NPAES of 2016. The MPAES has identified the MNR as an important zone for protected area expansion and contains significant unfragmented grasslands and irreplaceable biodiversity features in terms of the Mpumalanga Biodiversity Sector Plan.

2.3 Location

Middelpunt Nature Reserve (MNR) is located along the headwaters of the Lakenvleispruit in the Olifants River Catchment and within the Emakhazeni Local Municipality of Mpumalanga Province approximately 12 km south of Dullstroom and 30 km northeast of eMakhazeni (Figure 2).

MNR comprises two farm portions that encompass most of Middelpunt Wetland and its lateral inputs, namely Middelpunt 320 JT portion 9 and Elandsfontein 322 JT portion 11 (Table 2). The area of the two farm portions totals 526.607 ha. Minimal infrastructure has been built on these portions apart from two servitudes – Eskom transmission powerlines running between both portions and a gravel road bisecting Elandsfontein 322 JT portion 11. Part of a trout dam is situated in the southwest corner of Middelpunt 320 JT portion 9. The main wetland body of portion 9 is leased for research and conservation, whilst the remainder of portion 9 and portion 11 are leased for cattle grazing.

Table 4: Landholding and ownership.

No	Farm	Area (Ha)	Ownership
1	Middelpunt 320 JT portion 9	326.607	The registered owner is Dullstroom Trout Farm (Pty) Limited, Registration No. 1976/001541/07, represented by Peter Lever as Director. Deed of Transfer No. T107617/2002
2	Elandsfontein 322 JT portion 11	200.000	The registered owner is Dresden Property Investments (Pty) Limited, Registration No. 2003/012072/07, represented by Gavin John Walker as Director. Deed of Transfer No. T 54455/2000

MNR is situated centrally within the Greater Lakenvlei Protected Environment (Figure 2). It protects the upper reaches of the Lakenvlei wetland system (the "eastern branch") on the Steenkampsberg Plateau. Part of the reserve falls within the Mpumalanga-Drakensberg Strategic Water Source Area.

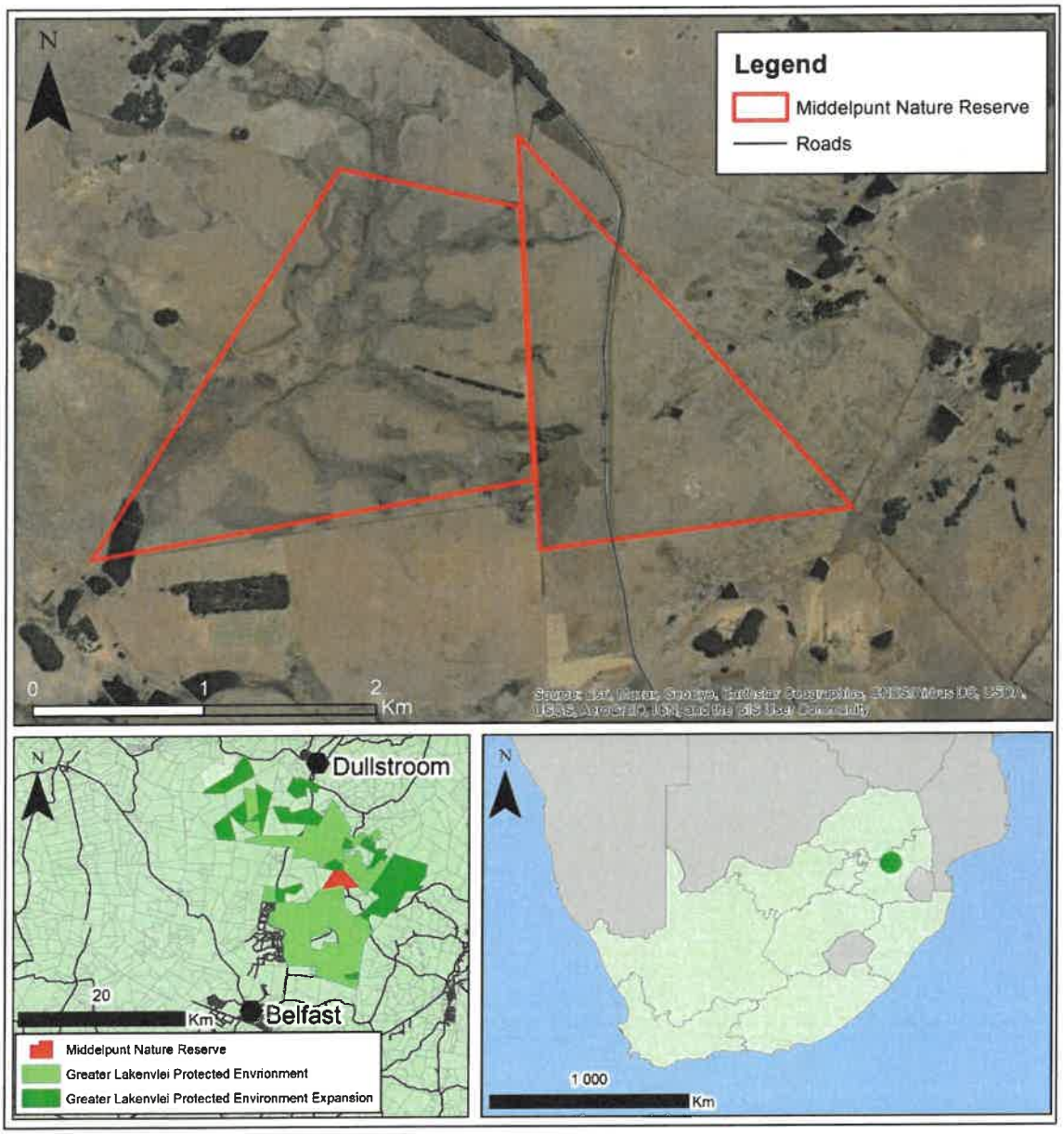

Figure 2: Regional location of Middelpunt Nature Reserve and Ramsar site.

2.3.1 The Protected Area Expansion Strategy and Implementation Plan

Middelpunt Nature Reserve falls within the Greater Lakenvlei Protected Environment, Mpumalanga-Drakensberg Strategic Water Source Area and the wetland is classified as a Critical Biodiversity Area (CBA) (Figure 2 and 3). Whilst the strategic expansion of the reserve is not intended at this stage, engagement with other protected areas to formalise the concept of collaborative protected area management on a broader scale to improve protected area connectivity and ecological functioning will always remain a priority. To ensure that expansion efforts are focussed in the right areas, open communication between relevant stakeholders is essential. The GLPE is currently in the process expanded by 7,448 ha, increasing the GLPE to a total of 21,227 ha.

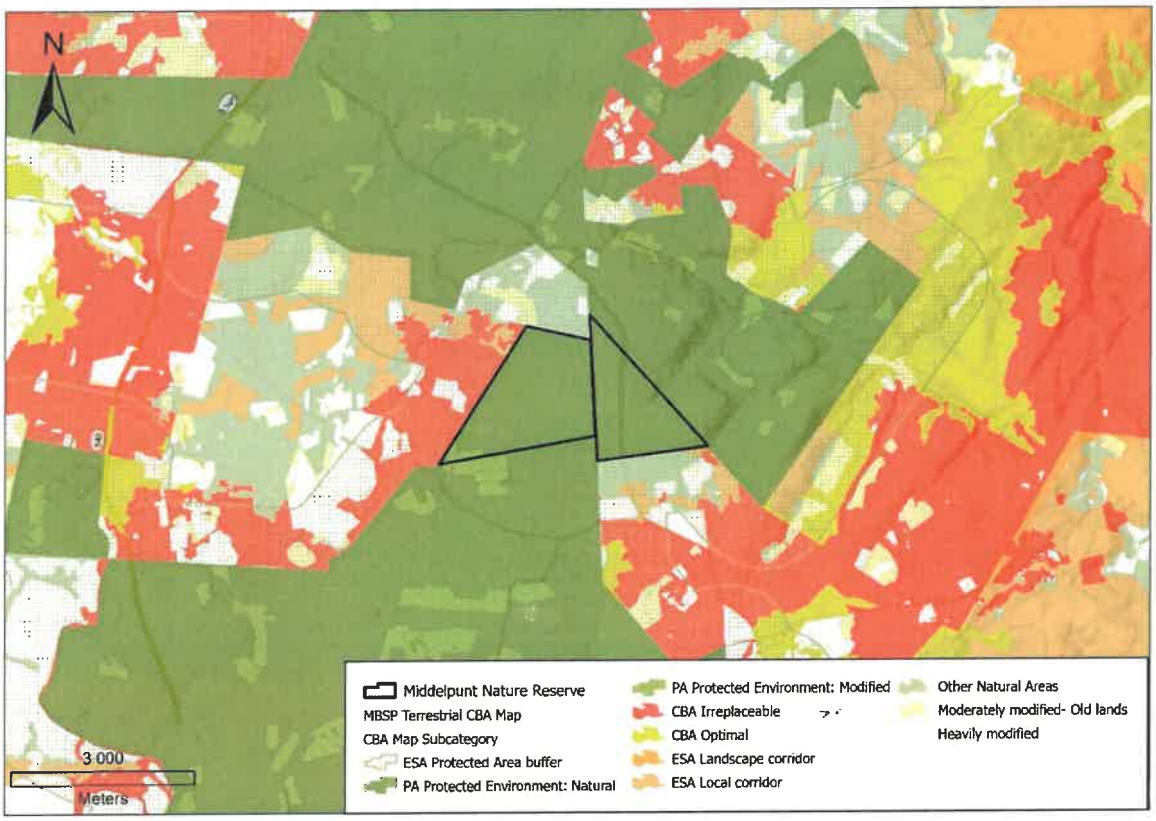

Figure 3: Surrounding terrestrial Critical Biodiversity Areas and Ecological Support Areas.

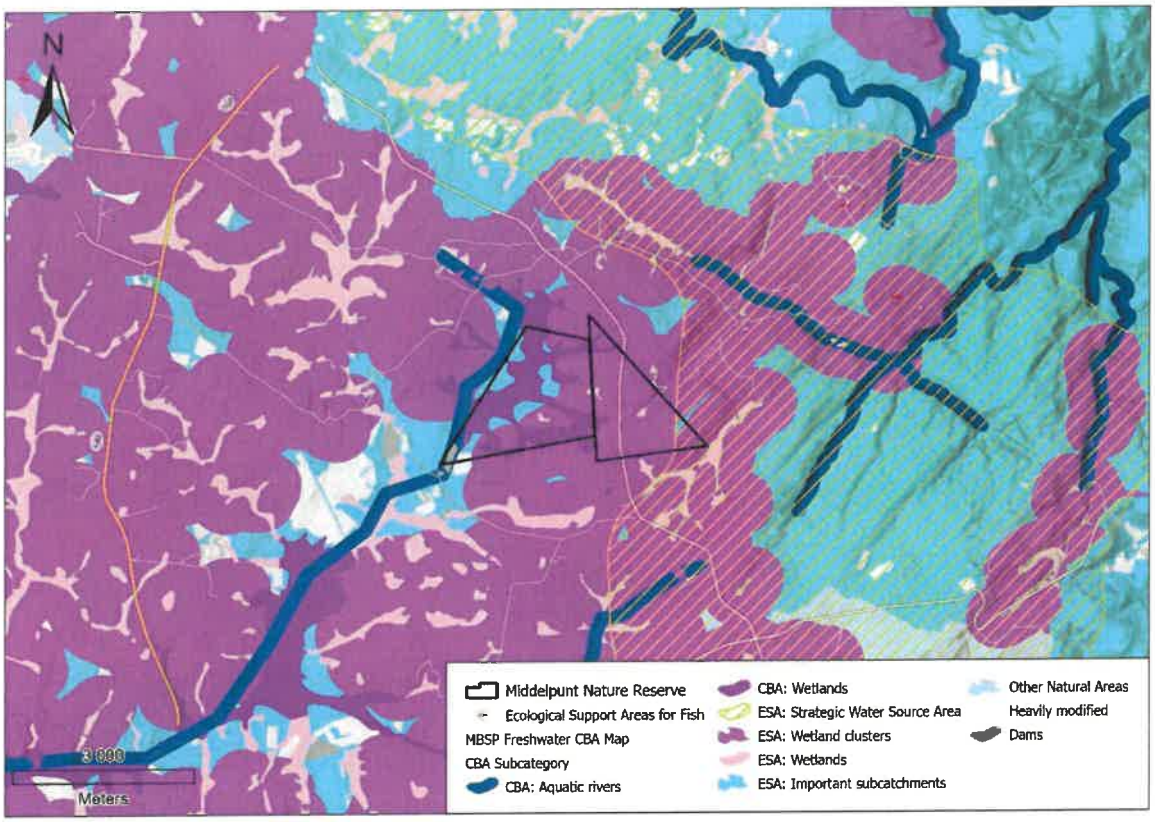

Figure 4: Surrounding freshwater Critical Biodiversity Areas and Ecological Support Areas

2.4 Surrounding Area Land Use and Transformation

The surrounding area is primarily used for tourism, trout fishing, and cattle and game farming. There are no imminent threats under the current landownership nor extensive land transformation in and around MNR.

It is important to note however, because of the location of MNR and with the current unprecedented expansion of renewable energy and mining in Mpumalanga Province, the threat of land use change and transformation always remains a threat to conservation. Coal mining with its associated impacts remains a major land use activity in the area, specifically the William Patrick Bower Colliery less than 5 km south of MNR. Diamond prospecting was also conducted on a neighbouring farm by Ibhubesi Ore Exploration (PTY) LTD although the mine has been mandated to rehabilitate the prospecting pit. A SAFCOL (South African Forestry Company Limited) plantation is located just over 5 km southwest of MNR.

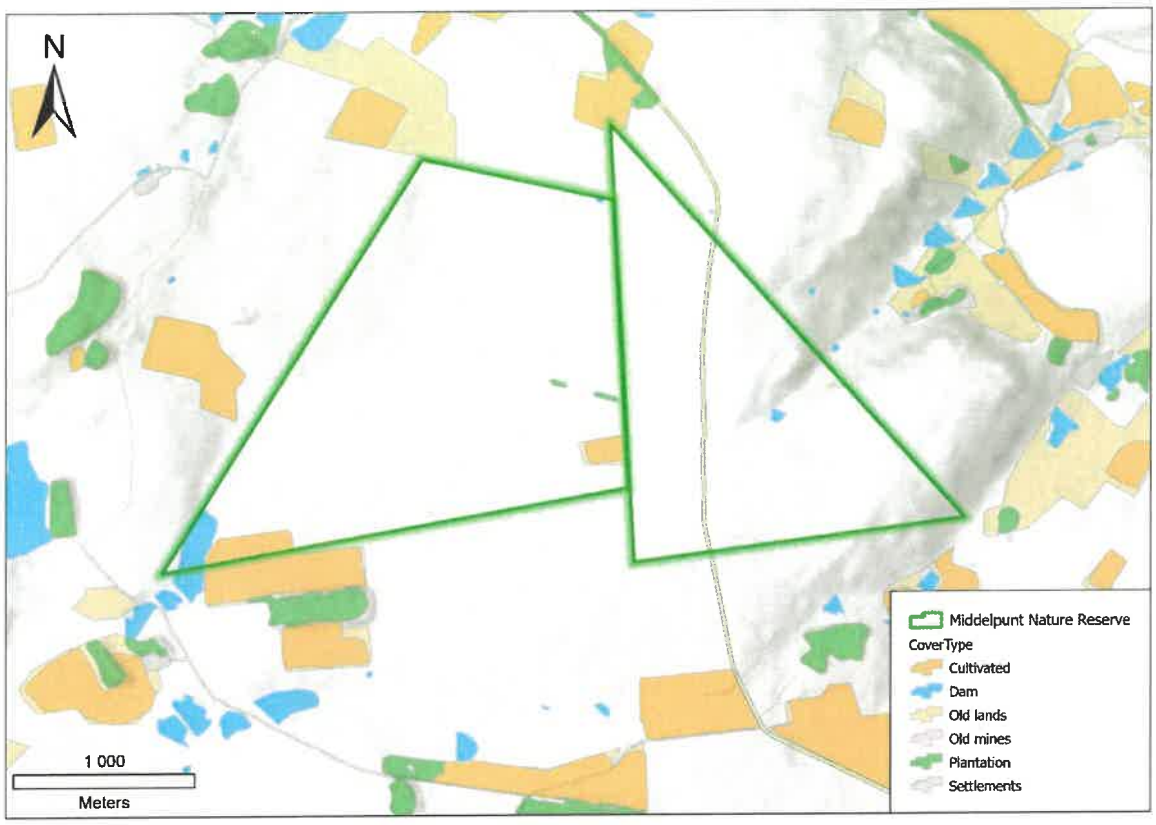

Figure 5: Land use surrounding Middelpunt Nature Reserve.

2.5 Ecology

2.5.1 Climate and Weather

The Steenkampsberg Plateau is characterised by a subtropical highland seasonal climate with distinct dry (May-September) and wet (October-April) seasons. Mean daily temperate is 10.3°C with a maximum average 15.4°C and minimum average of 4.9°C. The Mean Annual Precipitation (MAP) is 858 mm (660-1180 mm), augmented by frequent mists. Precipitation is mostly in the form of thunderstorms between October and March. There are approximately 21 frost days per year, varying greatly between 3 and 40 with a higher incidence of frost to the west. Frost is common between March and September. Snow has been recorded on several occasions.

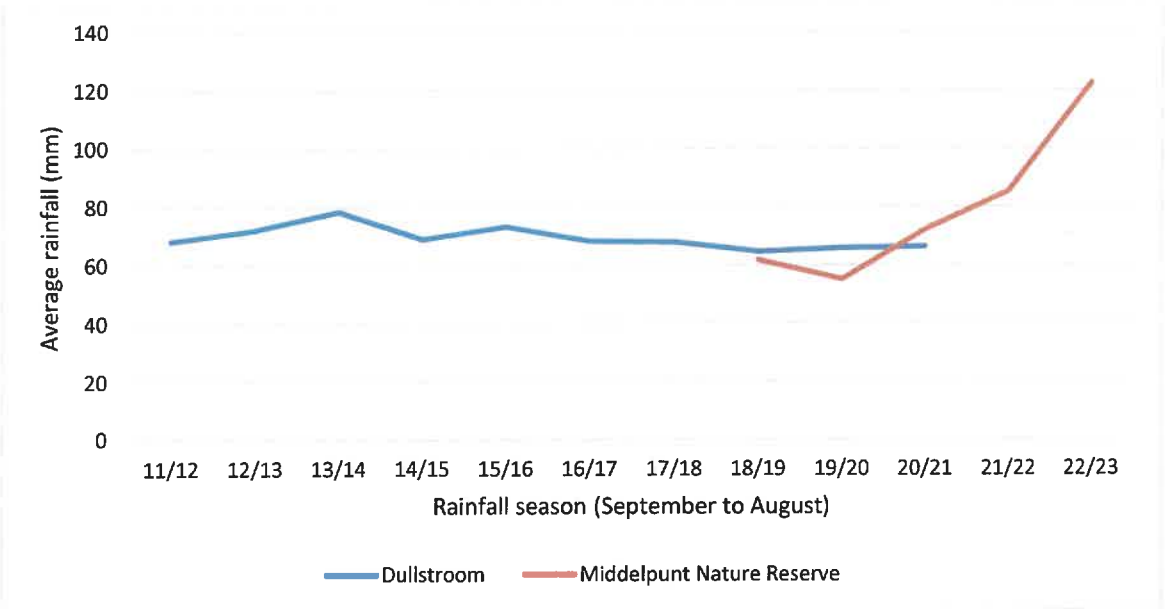

Figure 6: Average rainfall for Dullstroom and Middelpunt Nature Reserve from 2011.

2.5.2 Topography, Geology and Soils

Situated on the Steenkampsberg Plateau, the MNR is relatively flat with a gentle slope towards Middelpunt Wetland. The minimum elevation above sea level is 1880 m and the maximum elevation above sea level is 1920 m.

The area is underlain by two types of rock, namely sedimentary and intrusive igneous rocks. The sediments are principally quartzites (belonging to the Transvaal System: Pretoria Group: Steenkampsberg Formation), shales and alluvial soils. The intrusive rocks are mainly diabase outcrops between the quartzite bands. The geology primarily consists of the Nederhost Formation (200-800m thick, sandstone (arkosic in places) and mudrock with volcanic ash) and the Lakenvlei Formation (200-350 m thick, dominantly sandstone). Ferricete is present at the surface running parallel to the main wetland body. Three quartzite ridges occur in the area, running parallel from north to south. The divisions between valleys and drainage basins are mostly rounded crests that gradually lose height.

The valley-bottom wetland is dominated (70%) by Katspruit that are shallow to moderate in depth (300-500 mm) and depict restricted water movement because of the presence of the impermeable G-horizon. Champagne soil (peat) occurs in the permanent zones of the main Lakenvlei. The peat can be described as a reed-sedge based, fibrous on the surface to fine grained in texture towards the bottom. The peat is mostly underlain by a dark organic reach clay with thin layers of sand and grey to orange mottled clay towards the bottom. The rest of the soils for this land type are comprised of moderately deep Kroonstad (400-600 mm) soils (20%) as well as shallow to moderately deep (300-500 mm) Willowbrook soils (10%). Hillslope seepage wetlands comprises of Avalon soils on the edges, Kroonstad in the seasonal zones and Katspruit in the wetter parts.

The site has no major erosion issues.

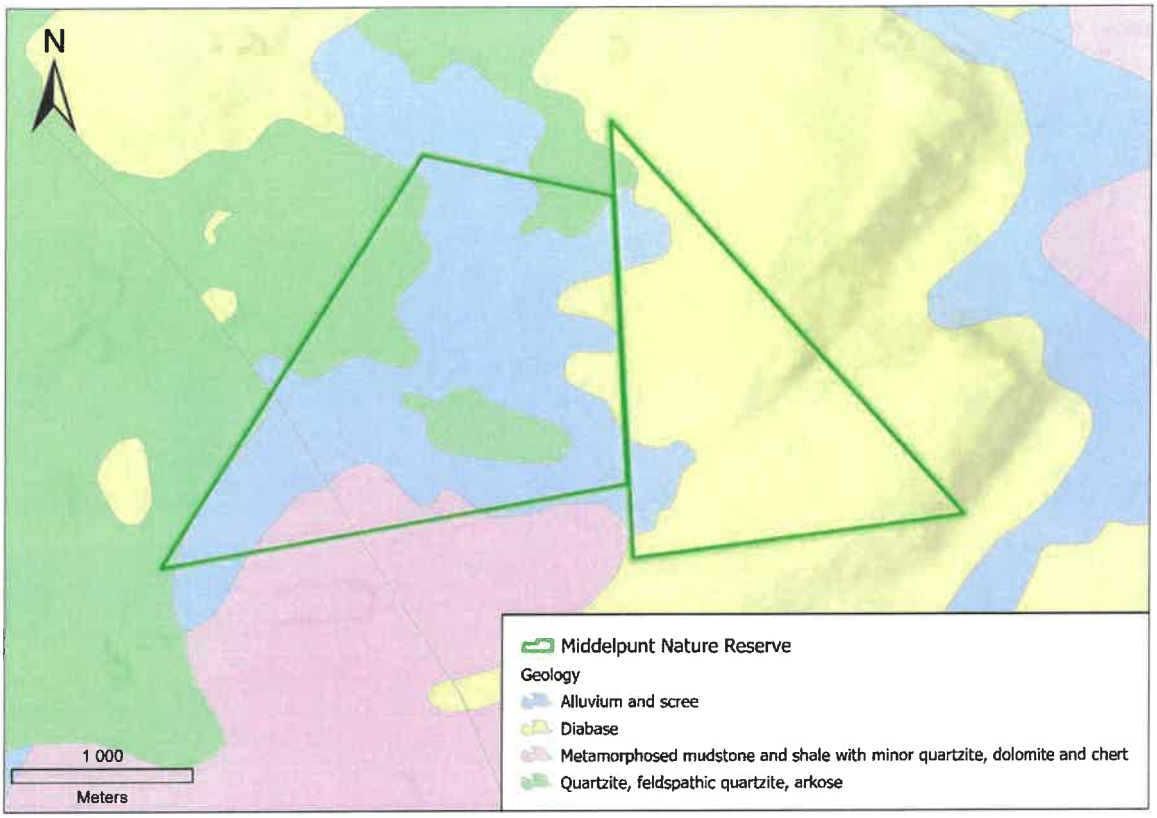

Figure 7: Geology of Middelpunt Nature Reserve.

2.5.3 Wetlands

Situated in one of South Africa's highest rainfall areas, the wetlands of MNR comprise a permanent freshwater unchanneled valley-bottom wetland supplied by lateral seeps and artesian springs. Middelpunt Wetland forms part of a larger wetland system called Lakenvlei, most of which falls within the GLPE. Middelpunt Wetland is in the headwaters of the upper Olifants River and form part of catchment B41A with a mean annual runoff of 49.50 x 106 m^3/annum. This flows westward and then to the north into the Steelpoort River, a tributary of the Olifants River.

The wetlands make up 198.26 ha (or 37.64%) of MNR and are examples of the natural wetlands which are characteristic of the Steenkampsberg Plateau biogeographical region. Middelpunt Wetland is unique in that it considered an ancient wetland system dated at 9 255 – 9 415 years BP and is peat-based (partially decomposed organic matter) with a peat layer depth of between 1.5 and 2.6 m, and an accumulation rate of 0.36 mm/year.

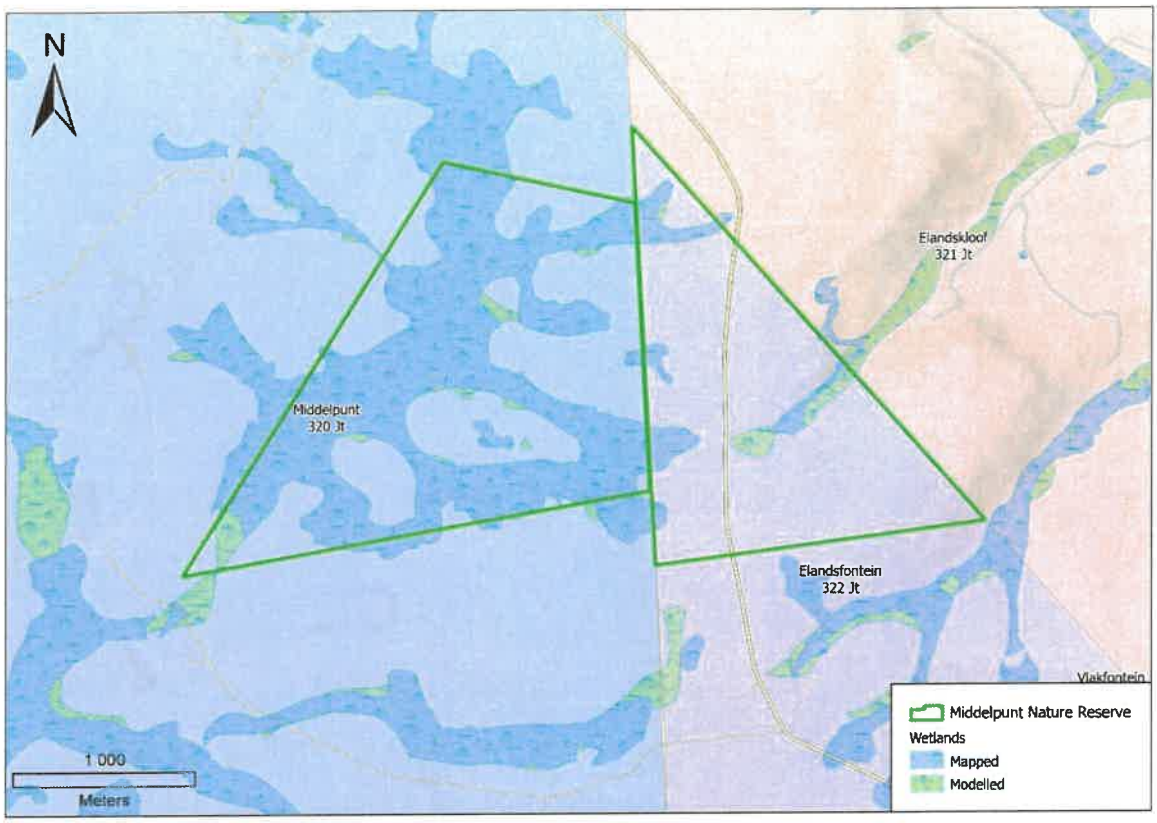

Figure 8: Wetlands in and surrounding Middelpunt Nature Reserve.

Table 5: Freshwater Biodiversity significance of Middelpunt Nature Reserve as identified in the Mpumalanga Biodiversity Sector Plan.

MBSP Freshwater	Ha	Percentage of land parcel
CBA: Aquatic rivers	5.37	1.1
CBA: Wetlands	178.79	35.3
ESA: Important subcatchments	46.55	9.2
ESA: Strategic Water Source Area	318.69	63.0
ESA: Wetland clusters	266.07	52.6
ESA: Wetlands	6.01	1.2
Heavily modified	2.93	0.6
Dams	3.53	0.7

The fine-scale vegetation description of the habitat used by White-winged Flufftail on MNR shows one vegetation community with three sub communities:

- *Carex austro-africana–Cyperus denudatus*: The vegetation is dominated by the sedges *Cyperus denudatus* (83% constancy) and *Carex austro-africana* (63% constancy), while the forbs *Persicaria decipiens* and *Senecio inornatus* are prominent throughout the community, with a 70% and 60% constancy.
    1. *Carex austro-africana–Cyperus denudatus–Fuirena ciliaris* sub-community: The vegetation is dominated by the sedge *Carex austroafricana*, while the sedges *Cyperus denudatus*, *Fuirena ciliaris* and the forb *Senecio inornatus* are locally prominent.
    2. *Carex austro-africana–Cyperus denudatus–Carex cognata* sub-community: The vegetation is dominated by the sedge *Carex cognata*, *Cyperus denudatus* and the forb *Fuirena ciliaris*.

3. *Carex austro-africana–Cyperus denudatus–Leersia hexandra* sub-community: The grasses *Leersia hexandra* and *Arundinella nepalensis* and the sedge *Cyperus denudatus* dominate the vegetation.

The vegetation of Middelpunt Wetland is indicative of the stable hydric status associated with peat, and the presence of carnivorous plants (namely *Drosera madagascariensis* and *Utricularia prehensilis*) in the wetland is indicative of the low nutrient status of this habitat. A high abundance of carnivorous plants has been recorded in some of the peatlands and includes species such as. Wetland plant species that occur in open water areas are *Typha capensis*, *Pycreus nitidus*, *Schoenoplectus brachyceras*, *Isolepis costata*, *Juncus oxycarpus*, *Eleocharis palustris*, *Eleocharis dregeana* and *Leersia hexandra*. A comprehensive plant species list can be found in Appendix F.

The management of the wetland is directly associated with the management of livestock grazing, fire, trout dams and the control of alien invasive plants. Management measures for each of these components have been detailed separately.

Livestock management

- The main area of concern is the significant impact cattle have on sensitive wetland vegetation (sedges and grasses) and peat layer in the form of trampling. Trampling of the vegetation layer destroys the 3-dimensional structure used by waterbirds, such as White-winged Flufftail, to breed and forage. Seepage wetlands lateral to the main valley-bottom wetland are also prone to erosion damage from cattle as they tend to be good sources of water in winter months. Cattle activity needs to be controlled within these sensitive areas by observing the provincial recommended stocking density for the area (1 LA unit per 3 ha).

- The main valley-bottom wetland should only be grazed once vegetation begins to actively grow after the first Spring rains (September) until 30 October to provide sufficient recovery before the White-winged Flufftail breeding season begins in mid-November. Grazing of the wetland can resume between late-March and late-April after quick cattle should be excluded during the dry season months.

- Reliance on water resources provided by lateral seeps during the wet season can be reduced by providing artificial water points (troughs and existing weirs). Similarly, the lateral seeps should not be grazed by cattle during the dry season months to prevent erosion.

- Any damage caused by livestock grazing should be reported and addressed through resting and rehabilitation interventions.

Burning management

- Frequency: The interval between fires should be determined by the growth rate of indigenous plants, the removal of biomass by livestock grazing, and by the preceding and predicted climatic conditions driven by the El Niño–Southern Oscillation. Given that vegetation assemblages and stocking densities are mostly constant, the interval between planned burns at MNR should primarily be determined by rainfall patterns. During average rainfall and La Nina cycles (above average rainfall), the reserve should be burnt

at 2-3-year intervals. During El Niño cycles (below average rainfall), the reserve should be burnt at 3-4-year intervals. MNR should not be burnt during drought periods.

- Timing: Wetlands should only be burnt 5 days after the first 25 mm of Spring rain (typically September/October) have fallen within a 24-hour period or if there is significant greening of grass swards following a winter with very high rainfall or snowfalls. This is to ensure that there is sufficient moisture in the sensitive peat layer to prevent destructive peat fires and protection of underground vegetation root stocks. The burning period should terminate on 15 October to allow sufficient regrowth of vegetation for the breeding of wetland birds.

- Season: Winter or dry season fires are too intense for wetlands due to the combustible organic substrate (peat) and late summer/early autumn fires are ineffective due to the accumulation and retention of water in wetlands collected by the surrounding catchment during the wet season. These fires may also negatively affect raptors breeding in the wetlands at this time, such as Marsh Owl, Grass Owl, and African Marsh Harrier.

Management and monitoring of important biota

- No threatened flora should be collected or harvested without the relevant permit.
- No threatened fauna should be collected or hunted without the relevant permit.
- When threatened animal species are observed in the wetlands, records should be kept to establish whether wetland management practices and rehabilitation efforts are having a positive impact on these species. BirdLife South Africa should be informed of any White-winged Flufftail activity on Middelpunt Nature Reserve.
- Native and alien pioneer plant species, specifically *Phragmites australis* (reeds) and *Typha capensis* (bulrushes), should be monitored and controlled to maintain the sedge-grass meadows used by White-winged Flufftail. The rapid expansion of wetland plant pioneer species is commonly a response to some other disturbance to hydrology and geology (soils) within or surrounding the wetland (e.g., erosion and sedimentation, excess nutrients, long periods of flooding, etc.). Monitoring can be accomplished through annual remote sensing of the different plant communities.

2.5.4 Grasslands

The health of the naturally occurring grassland types and their associated species is the foundation of biodiversity conservation and ecosystem functioning. Management should thus aim to ensure the overall conservation of the floral species by understanding which vegetation types are present and how to improve overall veld condition. Vegetation management interventions must not have a negative impact on any protected species in the reserve.

MNR falls within the Mesic Highveld Grassland Bioregion, which is part of the Grassland Biome. The vegetation is classified as Steenkampsberg Montane Grassland (GM30) and, at a smaller scale, falls within the Dullstroom Plateau Grasslands, a Threatened Ecosystem within South Africa which has been identified as needing protection. This landscape is mountainous with plateau grasslands, mountain slopes and shallow valleys. Grasslands are short with high forb diversity. The Steenkampsberg

Montane Grassland is still 74.7% natural although some parts have been afforested (14%) or cultivated (4%).

Currently the grazing system being applied is an open system rotated among three camps (West Camp, Central Camp, and East Camp) during the wet season. Approximately 700 ha are being leased for grazing by 280 large animal units (cattle). There is the intention to fence-off the Central Camp to create a North and South Camp and enable further rotational grazing. MNR falls within the 3 ha/LSU grazing capacity zone. Grazing should commence when grass leaves are 100 mm in length following the Spring rains with rotational resting during the wet season. The summary of the Veld Condition Assessment (Appendix G) can be used to plan for future vegetation and grazing management.

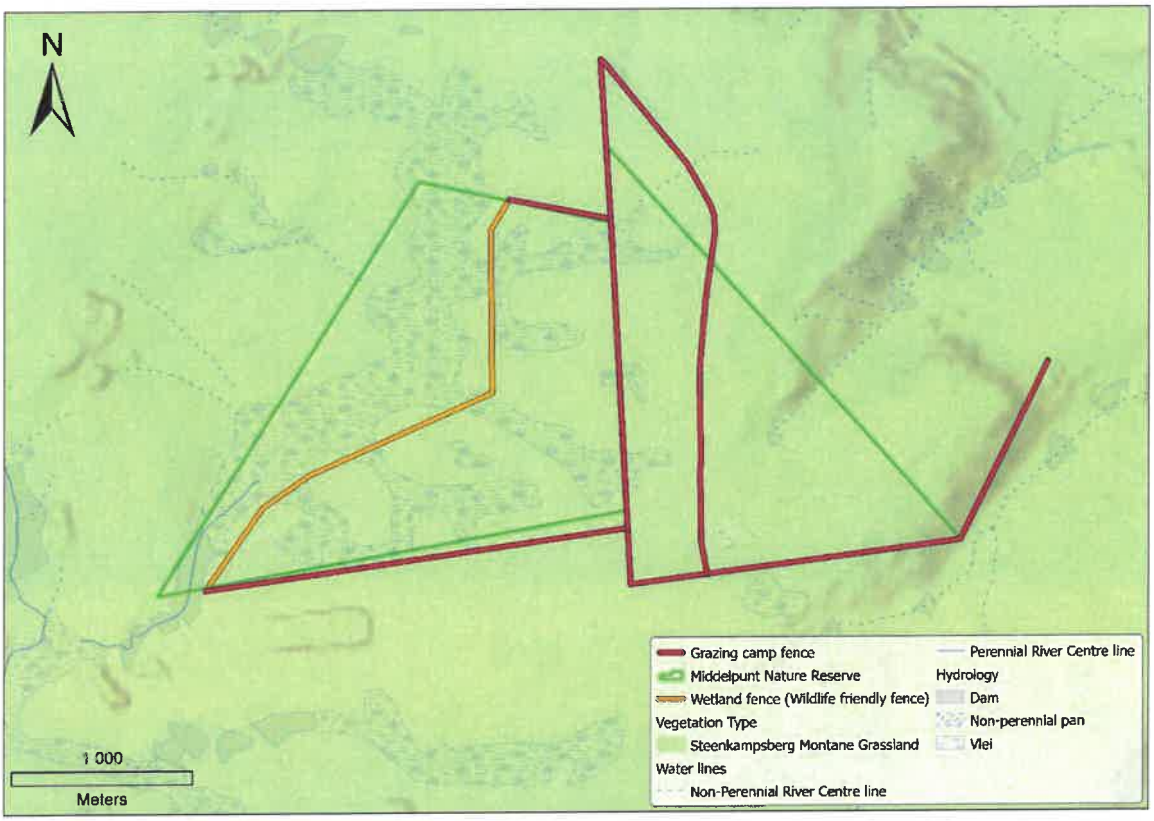

Figure 9: Vegetation communities and livestock grazing camps of Middelpunt Nature Reserve.

2.5.5 Fire Regime

Fire plays an important role in the ecological dynamics of grassland ecosystems, and has important effects on vegetation composition, primary productivity, and nutrient cycling. In developing burning and fire management strategies for MNR, the following guiding principles should be adhered to:

- Burning should be undertaken in such a way that it maintains spatial and temporal heterogeneity of the vegetation within the landscape.
- A patch mosaic of burnt and unburnt areas should be maintained.

- Burning must be undertaken with due consideration to the biodiversity conservation requirements of the reserve and the need to protect wetland bird species.
- Burning and fire management must be undertaken in a safe manner that is legally compliant with the National Veld and Forest Fire Act No. 101 of 1998.

In terms of Section 17 of the National Veld and Forest Fire Act No. 101 of 1998, landowners must have sufficient firefighting equipment, protective clothing and trained personnel for extinguishing fires as may be prescribed or, if not prescribed, reasonably required in the circumstances. It is therefore necessary to consider the following in relation to firefighting:

- The need to maintain a system of firebreaks to enable the management of controlled burns and to effectively fight and be protected from wildfires.
- The need to develop and maintain a Fire Response Plan in the event of wildfires emanating from or threatening the reserve.
- The size of the reserve and the requirements necessary to access different areas in the event of a wildfire. This relates to both roads and vehicles.
- The number of personnel necessary to effectively fight wildfires.
- The equipment necessary to effectively fight wildfires. This would include:
    - Firefighting equipment mounted on the backs of vehicles.
    - Backpack sprayers.
    - Beaters.
    - Personal Protective Equipment (PPE) for personnel involved in firefighting.

Burning should only take place at the legislated prescribed time by the local fire ward. Fuel loads will need to be managed with livestock grazing as this is the primary source of revenue generated from the reserve, particularly in times of above and below average rainfall. Given that a large portion of MNR comprises wetland habitat and that the conservation of wetland birds is one of the main objectives, the burning regimes of grasslands should follow the guidelines stipulated for wetlands (2.5.3).

Additional guiding points to consider for the grasslands:

- Season: The correct fire season is vital to retaining species richness. Naturally occurring fires in grasslands are mostly started by lightning from electrical storms that occur in the summer months or wet season. All fires that occur in the dry season (which are not associated with lightning storms) should be controlled as far as possible.

- Intensity: Intensity is influenced by the fuel load, fuel moisture, relative humidity, gradient and wind speed. The intensity can be manipulated by selecting wind conditions and point of ignition relative to slope that will lead to the desired type of fire. It is preferred to use a mix of different intensities over time should prescribed burns take place.

- Alien vegetation: Woody species can increase the temperature of fires to an undesirable level and should be removed prior to veld burning.

- Proportion of area burnt: It is vital to maintain a mosaic of different vegetation ages within a property to maintain species diversity. Unburnt patches of vegetation also act as refugia for species using the reserve at the time of planned burns.

- Risk to neighbouring properties: All fires should be extinguished as far as possible should it become apparent that the fire is likely to spread and pose a risk to neighbouring properties.

- General:
    - Inform neighbours of your intention to burn at least two weeks prior to the start of the wet season.
    - Have property maps detailing access roads, firebreaks, inhabited homesteads and other infrastructure available to give to fire fighters should a fire escape the reserve.
    - Ensure firefighting equipment is maintained and in good working order before the start of each fire season.
    - Keep accurate records of fires using satellite imagery and include information such as the date and time of ignition, weather conditions, etc.

- Fire Protection Associations (FPA): FPA are voluntary associations formed by landowners to jointly prevent, predict, manage, and extinguish veld fires. The main advantage of an FPA is that no presumption of negligence can be used in civil proceedings due to fire damage if a landowner belongs to an FPA, even if the fire started on that landowner's property. Furthermore, resources can be combined with other landowners to manage fires more effectively and firebreaks can be placed where best for the area, not just one property. Therefore, MNR should belong to an FPA and be registered with the local fire ward (Mpumalanga Escarpment Platorand Fire Protection Association).

- Fire breaks: Every property must have a system of fire breaks in place. The breaks must be on the boundary of the property unless there is an exemption granted by the Minister or an agreement with the adjoining landowner that the firebreak be located somewhere else if a FPA exists.
    - Firebreaks must be located strategically to control the spread of wildfires, but mainly serve as an access road from which to fight a fire.
    - A sensible firebreak width is not wider than 30-50 m in grassland areas and must not be burnt during times of high fire risk.
    - Owners should ensure that firebreaks are positioned and prepared in such a way as to cause the least disturbance to soil and biodiversity. Where possible firebreaks should be located to avoid the wetland.
    - If burning is going to be used for making a firebreak, or senescent veld is going to be burnt, a landowner must either agree with his/her neighbours on a date for burning or give neighbours and local fire officers written notice of intention to burn at least two weeks prior to burning.
    - The landowner, or somebody properly delegated, must be present at the burning with enough people and sufficient equipment to control the fire.
    - Burning may not be carried out when conditions are not suitable, or the fire danger rating is high.

- Runaway fires: When a fire occurs that poses a danger to life or property, a landowner must immediately inform the fire protection officer and neighbours and do everything in his power to combat the fire and prevent it from spreading.

2.5.6 Alien and Invasive Plant Species

Invasive alien plant species have a significant negative impact on the environment by causing direct habitat destruction, increasing the risk and intensity of wildfires, and reducing surface and sub-surface water. In terms of the National Environmental Management: Biodiversity Act (No.10 of 2004 – NEMBA) and the Conservation of Agricultural Resources Act (No.43 of 1983 – CARA), landowners are required to control and eradicate listed invasive alien species on their land.

NEMBA categorises alien plants on the following basis:

Category 1a: Prohibited – a person in control of a Category 1a Listed Invasive Species must comply with the provisions of section 73(2) of NEMBA; immediately take steps to combat or eradicate listed invasive species in compliance with sections 75(1), (2) and (3) of NEMBA; and allow an authorised official from DEA to enter onto land to monitor, assist with or implement the combatting or eradication of the listed invasive species.

Category 1b: Prohibited/exempted if in possession or under control – a person in control of a Category 1b Listed Invasive Species must control the listed invasive species in compliance with sections 75(1), (2) and (3) of NEMBA. A person contemplated in sub-regulation (2) must allow an authorised official from DEA to enter onto the land to monitor, assist with or implement the control of the listed invasive species, or compliance with the Invasive Species Management Programme contemplated in section 75(4) of the Act.

Category 2: Permit required – Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the Act as species which require a permit to carry out a restricted activity within an area specified in the notice or an area specified in the permit. A landowner on whose land a Category 2 Listed Invasive Species occurs or person in possession of a permit, must ensure that the specimens of the species do not spread outside of the land, or the area specified in the notice or permit. Unless otherwise specified in the notice, any species listed as a Category 2 Listed Invasive Species that occurs outside the specified area contemplated in sub-regulation (1), must, for purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to Regulation 3. Persons or organ of state must ensure that the specimens of such Listed Invasive Plant Species do not spread outside of the land over which they have control.

Category 3: Prohibited – Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of NEMBA, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of the Act, as specified in the notice. Any plant species identified as a Category 3 Listed Invasive Species that occurs in riparian areas, must, for the purposes of these regulations, be considered a Category 1b Listed Invasive Species and must be managed according to regulation 3.

Invasive alien plant species present on MNR occur at low densities and include *Eucalyptus globulus* (Blue Gum, *Eucalyptus* species are NEMBA category 1b or 2 depending on the area) and *Acacia mearnsii* (Black Wattle, NEMBA category 2). The above-mentioned species will be systematically removed over time – including mature trees and saplings. All invasive species to be removed will be mapped. The overarching management objective is to control alien invasive plants on MNR at a density

below 1% of the land area. This is considered "maintenance phase". Annual budgets must be assigned, and a structured control plan developed. For detailed species-specific control measures, refer to the *Guide for the Control of Problem Plants South Africa* (Van Zyl, 2022).

General clearing principles:

- Alien and invasive species control programs are long-term management projects and a clearing plan, which includes follow up actions for rehabilitation of the cleared area, is essential. This will save time, money, and significant effort.
- Areas less infested (i.e., with young/immature, less dense trees) should be cleared first to prevent the build-up of seed banks. Starting with less dense areas will also require fewer resources and have greater impact in the long term.
- Dense mature stands should ideally be left for last, as they will likely not increase in density or pose a greater threat than they already do.
- Collective management and planning with neighbours allow for more cost-effective clearing and maintenance, considering alien seeds are easily dispersed across boundaries by wind or water courses.
- Fire with the appropriate management is a cost-effective clearing method, but untimely and uncontrolled fires easily and often defeat the purpose of mechanical clearing. Follow up after fire with manual seedling removal is essential, or in extreme cases where there is little other vegetation, herbicide spraying could be considered.
- All clearing actions should be monitored and documented on an annual basis to keep track of which areas are due for follow-up clearing the following year. Crucially, areas of historical overutilisation such as old kraals, feeding and drinking stations must be actively monitored as these areas are prone to infestation by alien and invasive plant species once cattle are removed.
- Most alien vegetation control operations are carried out in environmentally sensitive areas. To minimise the impact of herbicides on the natural environment and importantly to protect wetland species on MNR, the following must be observed:
  - Area contamination must be minimised by careful, accurate application with the minimum amount of herbicide needed to achieve good control.
  - Care must be taken to prevent contamination of any water bodies. This includes due care in storage, application, cleaning equipment and disposal of containers, product and spray mixtures.
  - Equipment should be washed outside of the reserve.
  - Coarse droplet nozzles should be fitted to avoid drift onto neighbouring vegetation.
  - To avoid damage to indigenous or other desirable vegetation, products should be selected that will have the least effect on non-target vegetation.

2.5.7 Flora

A provisional plant list consists of 72 species: 16 forbs, 11 wetland plants, and 45 grasses (Appendix F). Threatened plants which have been observed at the reserve (Appendix F) include the Crinkle-leaf Pineapple Lily (*Eucomis vandermerwei*) (Vulnerable) and *Streptocarpus latens* (Rare).

2.5.8 Mammals

No formal assessment of mammal species has been undertaken on MNR. Threatened mammals which have been observed at the reserve (Appendix F) include the Rough-haired Golden Mole (*Chrysospalax villosus*) (Vulnerable), Juliana's Golden Mole (*Neamblysomus julianae*) (Endangered), Robust Golden Mole (*Amblysomus robustus*) (Vulnerable), Short-eared Trident Bat (*Cloeotis percivali*) (Endangered), Ground Pangolin (*Smutsia temminckii*) (Vulnerable) and Serval (*Leptailurus serval*) (Near Threatened).

There are no immediate plans to stock MNR with game. However, should MNR be stocked in the future the following principle will apply: to promote the conservation of indigenous wildlife through the implementation of effective game management, while contributing towards the rehabilitation of plant growth and overall ecosystem functioning.

2.5.9 Avifauna

A total of 249 bird species have been observed (Appendix F) at MNR. Of these, 20 species are threatened. Most notably, the globally Critically Endangered White-winged Flufftail has been confirmed to breed at Middelpunt Wetland.

2.5.10 Reptiles, Amphibians and Invertebrates

A complete record of insects, amphibians and reptiles is not yet available for MNR. In 2018, an endemic peat borrowing crab (*Potamonautes flavusjo*) was described, making MNR one of two known sites where the crab occurs in South Africa. An endemic butterfly, the Verloren Valei Bronze-Speckled Widow (*Serradinga darki amissivallis*, formerly Clark's Lost Widow) has also been observed near MNR.

2.5.11 Threatened Species

MNR has a significant number of regionally threatened and endemic species that require conservation interventions (Appendix F). These species are key indicators of ecosystem health and form the focus of management interventions.

Some management interventions to consider for threatened species to continue to thrive on the reserve include:

1. Improved security to reduce the risk of illegal access by poachers onto the property.
2. The minimisation of disturbance to these species, especially the White-winged Flufftail during its breeding season (November to March).
3. Appropriate grazing and fire management will maintain suitable habitat for species. MNRLA should contact BirdLife South Africa prior to burning to avoid disturbing the breeding activity of threatened species.

2.6 Infrastructure

2.6.1 Overview of Reserve Infrastructure

Infrastructure in MNR includes fencing, Eskom transmission powerlines, two small weirs, some derelict low stone walls and a gravel road that runs through Elandsfontein 322 JT portion 11. Part of a trout dam is situated in the southwest corner of Middelpunt 320 JT portion 9.

2.6.2 Trout Dam Management

The Dullstroom Trout Farm's (DTF) main source of income is the sale of trout for flyfishing to its client the Transvaal Fly Fishing Club and the clubs' guests. The DTF's seven dams totalling 19.6 ha when full need to be stocked with catchable fish averaging about 700 g throughout the year to meet the demand, excluding the hottest period from mid-December to mid-March. Trout do not breed in these still waters and are relatively short lived with the males occasionally reaching four years while most females do not exceed three years of age. Predation is primarily by the White-breasted Cormorant (*Phalacrocorax lucidus*), Spotted-necked Otter (*Hydrictis maculicollis*) and to a lesser extent by African Clawless Otter (*Aonyx capensis*) and Fish Eagles (*Haliaeetus vocifer*). Losses due to predation can be quite heavy but in the last 10 years most efforts to control these predators have ceased as they were largely ineffective. The top end of Dam 3 is situated in the MNR, and the total size of the dam is 6.7 ha when full. During the 10-month period of regular stocking some 500 catchable trout will be released of which about 85% are Rainbow Trout (*Oncorhynchus mykiss*) and 15% Brown Trout (*Salmo trutta*) and these are purchased from two trout farmers in the Mashishing (Lydenburg) area.

All the dams are stocked with sterile (triploid) Grass Carp (*Ctenopharyngodon idella*) to control aquatic weeds (*Lagarosiphon* spp.) These are long lived, possibly reaching 30 to 50 years of age, and reaching a mass of 6 to 9 kg. Dam 3 also contains populations of small, Banded Tilapia (*Tilapia sparrmanii*) and small Goldie Barbs (*Barbus pallidus*). There is a healthy population of Rana frogs and African clawed toads (platannas) and the occasional terrapin.

Due to the permanent wetland above Dam 3 water levels are reasonably constant except for period of drought. The wetland also reduces heavy flooding which sometimes occurs during mid-summer while siltation is a rare occurrence. The pH of the water is about 7.0.

It is sometimes necessary to control aquatic weeds opposite key angling spots with the use of a cable towed by a tractor. Similarly, common reeds (*Phragmites australis*) are cut to a very limited degree at key fishing spots on the banks to provide access to anglers.

2.7 Cultural Heritage

No formal heritage assessment has been completed for MNR and there are no known areas of significance. However, should any heritage resources be discovered (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations and fossils), the South African Heritage Resources Agency (SAHRA), or similar organisation, must be contacted to carry out an assessment of the area.

2.8 Socio-economics

Middelpunt Nature Reserve is in Ward 4 and 6 of the Emakhazeni Local Municipality situated within the Nkangala District Municipality. The towns Dullstroom, Emgwenya (Waterval Boven), eMakhazeni (Belfast) and eNtokozweni (Machadodorp) are included within this municipality. According to Statistics of South Africa Community Survey, the population within the municipality increased from 47 216 (2011) to 48 149 (2016) with most of the population between 15 to 64 years (67.8%). Statssa (2011) indicates that 25.9% of the eMakhazeni population were unemployed and 34.2% of those constitute youth.

Avitourism has become a popular tourist activity in the area. Avitourism is a niche tourism market in which tourists undertake overnight travel outside of their usual environment to view birds in their natural habitat. Birding is one of the fastest growing nature-based tourism activities worldwide and is experiencing similar growth in popularity in South Africa. For example, a 2010 study by the Department of Trade and Industry found that South Africa's avitourism market at the time was between 21 000 and 40 000 avitourists annually, of which domestic avitourists numbered between 13 000 and 24 000 per annum. Avitourists spent between R927 million to R1,725 billion annually, of which domestic avitourists spent between R482 million and R890 million annually. Avitourism is encouraged in the area through BirdLife South Africa's Steenkampsberg Birding Routes.

In 2012, it was recorded that the tourism and hospitality industry provided at least 1 097 full time positions and 208 part time positions in Dullstroom and the surrounding area. Tourism has provided social stability through capacity development and improved standards of living for poorer families.

By allowing the grasslands of MNR to be leased for grazing, the reserve also contributes to the food production and security of South Africa.

Constructive relationships with neighbouring communities in the region are an important aspect of the effective conservation of protected areas. In striving to drive socio-economic development in the region, MNR should aim to develop a strong sense of partnership with communities in the region.

The following guiding principles should be adhered to:

- The focus of employment and procurement should be on developing opportunities within local communities living within the municipality.
- Efforts should be made to ensure that the community members living in the municipality are aware of MNR and the role it plays in biodiversity conservation and the supply of ecosystem services.

2.9 Law Enforcement

A security strategy is required to ensure the safety of biodiversity resources in MNR. The strategy will place emphasis on managing access control to prevent any illegal and unauthorized activities from taking place. Access management rules will be stipulated through the strategic placement of signage and access-controlled gates. Border fences will be maintained to restrict both livestock and human movement over the reserve's boundaries.

Access rules

The Management Authority (MNRLA) provides consent to the Co-management Parties to access the Nature Reserve for the purpose of carrying out support to the Management Authority.

The Management Authority (MNRLA) will accept formal requests for access to the reserve by external partners and shall provide their decision in writing based on the relevance of the access required. These access arrangements will be reviewed on an annual basis by the Management Authority.

3. ZONATION PLAN

The aim of the zonation plan for Middelpunt Nature Reserve is to provide spatial guidelines which inform the various management and usage activities which can take place within the reserve, while ensuring that these activities do not contradict each other, or the values of the management plan. It is, furthermore, also a requirement of the National Environmental Management act (No. 57 of 2003), that the management plan for a protected area includes a zonation plan, which indicates which activities are allowed on the property.

The zonation scheme serves only as a broad guideline for the planning and management of MNR. Regardless of the zonation adopted, due process must be followed for development proposals. The establishment of roads, buildings and other built infrastructure must be carefully considered, particularly in identified sensitive areas. It will be important to carefully assess the requirements for privacy and aesthetics in terms of their potential impact on the carrying capacity and functioning of sensitive areas. This fine-scale planning must be addressed on a case-by-case basis.

3.1 Guiding Principles for Zonation

The guiding principles are that zonation:

- is the foundation of all planning and development within a protected area, with the aim of ensuring its long-term sustainability;
- ensures the integrity of scenic quality by limiting human intrusions into the landscape;
- accommodates a range of opportunities for experiences of solitude and nature-based recreation which do not conflict with the desired social and environmental states;
- confines development to areas that are robust enough to tolerate development and without detracting from the "sense of place";
- channels access into the reserve and movement within it; and
- sets the limits of acceptable change to minimize the loss of biodiversity and to reduce conflict between reserve uses.

3.2 The Zoning System

Zonation within Middelpunt Nature Reserve is based on the following zones:

Remote zone (RZ)	Areas in which most built infrastructure is excluded, with a primary focus on wildlife conservation. In the context of the Middelpunt nature reserve (MNR), this area is as close to 'wilderness' as one may find within the MNR. It is a largely unmodified natural landscape, not easily accessible by road, mostly visually secluded, with very limited intermittent views of human activities and development outside of the MNR.
Primitive zone (PZ)	This zone is a transitional zone between the RZ and LIDZ, and includes landscapes that are generally in a natural state, but may include limited transformed areas (including cultivated lands, and small scale infrastructural development).

Low Intensity De velopment zone (LIDZ)	This zone incorporates management and operational areas, primary entrance areas and access roads as well as buildings and farmsteads

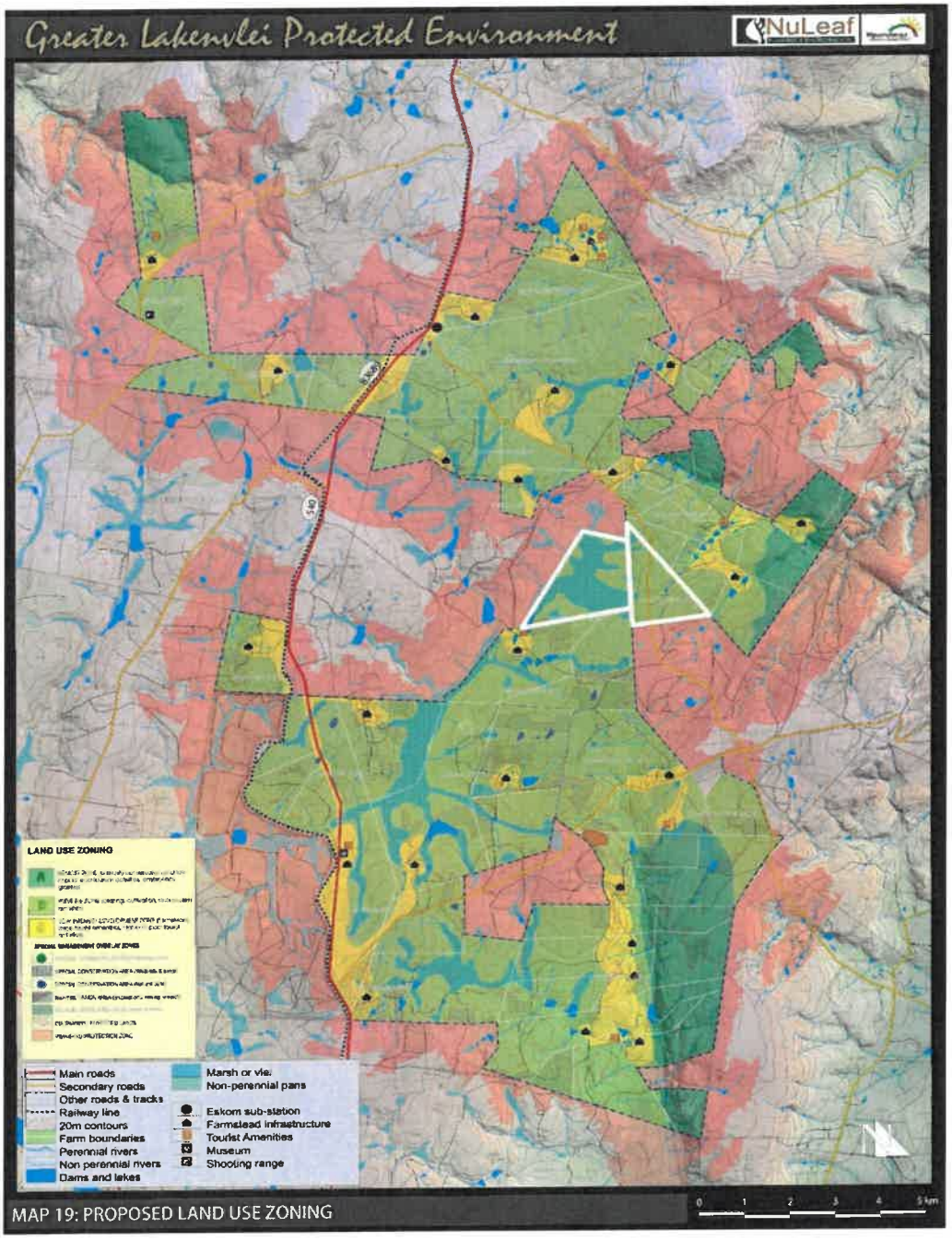

Figure 10: Zonation Map of Middelpunt Nature Reserve.

Land Use Zones for the Middelpunt nature reserve (aligned to the GLPE Zonation)					
LAND USE ZONE	CHARACTERISTICS	MANAGEMENT GUIDELINES	APPROPRIATE ACTIVITIES	APPROPRIATE FACILITIES	ACCESS / ROADS TYPE OF ROAD
Note: Use Zones relate to visitor experiential qualities					
TERRESTRIAL ZONES					
REMOTE ZONE (RZ)	In the context of the Middelpunt nature reserve (MNR), this area is as close to 'wilderness' as one may find within the MNR. It is a largely unmodified natural landscape, not easily accessible by road, mostly visually secluded, with very limited intermittent views of human activities and development outside of the MNR. The Remote Zone is primarily defined by sensitive landscapes, including wetlands, rivers, steep slopes and ridge lines. As a result, the area is likely to include very high species diversity. The Steenkampsberg range features prominently in this regard. The RZ may also include Habitat Corridors, (small fragments of natural habitat within the transformed portions of the farms that connect the conservation areas).	The Remote Zone should be primarily managed as a conservation zone with specific focus on retaining habitat integrity and ecosystem functioning, and preserving the natural state and wilderness character of the area. In this regard, no additional roads or tracks, structures or cultivated lands should be developed within this zone. Where possible, existing human disturbances should be removed and rehabilitated over time. This should include degraded areas (alien infestations), and disturbed areas (erosion, excavations, mining scars). Farmers should aim to limit the grazing of this area by commercial livestock to period of extraordinary or emergency conditions (i.e. drought, fire).	• Farming: Grazing of livestock should be limited to period of fodder shortage elsewhere, and at stocking rates of 60-80 % below the commercial stocking rate, relevant to present condition. • Tourism: This zone is ideally suited for passive recreational pursuits, specifically nature appreciation (bird watching etc.) via non-motorized access (hiking, bridle and mountain bike trails.	Rustic overnight trails camps could be developed in this zone, as well as discreet viewpoints and hides. No farming related infrastructure should be developed within this zone.	Access should be limited to non-motorized access (hiking, biking, horseback). None.
PRIMITIVE ZONE (PZ)	The Primitive Zone is a transitional zone between the RZ and LIDZ, and includes landscapes that are generally in a natural state, but may include limited transformed areas (including cultivated lands, and small scale infrastructural development).	• Management of this zone should be focused on preserving the rural farmland appeal and character of the area. • All derelict structures and unused roads and tracks should be removed and rehabilitated.	• Farming: Grazing camps that are used regularly for commercial livestock production and are thus grazed at a sustainable commercial stocking rate	Ideally, all major farming infrastructure, including farmsteads, staff housing sheds	Limited and controlled motorized access on designated routes.

		• Ideally, the long term objective for this zone should be focused on reclaiming and rehabilitating old fallow and presently cultivated lands.	relative to present veld condition. • Tourism: Primarily low impact game walks, hiking trails, mountain bike trails, bird watching, horseback trails, adventure activities.	and barns should be located in the LIDZ. Small (<48 beds) permanent or temporary low impact tourist camps are appropriate to this zone.	Ideally only 2-spoor all-weather farm tracks should be permitted in this zone.
LOW INTENSITY DEVELOPMENT ZONE (LIDZ)	This is an accessible, modified landscape, largely defined by farmsteads, cultivated lands and busy transportation corridors along main public through roads. This landscape can absorb larger concentrations of people and can accommodate infrastructure necessary for the accessibility and management of the area.	• Management of this zone should strike a compromise between resource utilization and conservation. • Management of this zone should be focused on preserving the rural farmland appeal and character of the area.	The LIDZ can generally accommodate an unrestricted range of tourism and farming activities, including high density, high impact activities.	Within the context of the MNR, this zone may include farmsteads, staff accommodation, workshops, sheds and barns, as well as tourist infrastructure such as lodges, B&B's, information centres, picnic sites etc.	This is a highly motorized area including public through roads (tarred and gravel), and access roads to farmsteads and related infrastructure. This zone can therefore accommodate busses and delivery vehicles.

LAND USE ZONE	CHARACTERISTICS	MANAGEMENT GUIDELINES	APPROPRIATE ACTIVITIES	APPROPRIATE FACILITIES	ACCESS
SPECIAL MANAGEMENT OVERLAYS					
SPECIAL CONSERVATION (BIODIVERSITY)	• Areas of extreme sensitivity (e.g. red data and endemic species). • Area of exceptional diversity, endemism and rarity. • This includes wetlands, seeps and natural pans within the MNR.	• Limited access area. • No vehicular access. • As a rule, no development should be permitted within these areas, unless an EIA process is undertaken.	• Scientific and conservation activities only.	• None, pending EIA approval (for example may include boardwalks through wetland areas)	• Mainly for scientific and conservation measures, but some access for education and interpretation can be considered. • No roads, pedestrian access only
SPECIAL CONSERVATION (HERITAGE)	• Specific areas of cultural historical or archaeological value, that require specific protection against degradation, vandalism etc. • In the context of the MNR , this may include gravesites, graveyards, buildings or structures protected under the National Heritage Resources Act, bushman paintings etc.	• Limited access area. • As a rule no development (including restoration and or demolition) should be permitted within these areas, unless an EIA or HIA process is undertaken.	• Scientific and conservation activities • Access for tourists.	• Any facilities must be carefully planned and screened in an EIA or HIA process.	• Access for tourism, education and interpretation can be considered. • Ideally, these areas should be accessed by foot.
REHABILITATION (INVASIVE EXOTIC SPECIES)	• This overlay zone includes all areas within the MNR that are currently infested with alien invasive vegetation.	• Total removal of all alien invasive plant species, with primary focus on the RZ, and secondly, the PZ. • The goal is to reinstate this overlay zone to the base zoning (PZ or RZ).	• Removal of timber can be used for charcoal production within the LIDZ.	• N/A	• No specific restrictions

REHABILITATION (EXCAVATIONS, MINING AND EROSION)	• This overlay zone includes all areas within the MNR that are currently degraded or disturbed as a result or soil erosion, overgrazing, excavations (gravel pits etc.) and mining scars (tailings dumps, slimes dams, etc.)	• Total rehabilitation of these areas, with primary focus on the RZ, and secondly, the PZ. • The goal is to reinstate this overlay zone to the base zoning (PZ or RZ).	• N/A	• N/A	• No specific restrictions
CULTIVATION	• This overlay zone includes fallow lands and cultivated lands that are used regularly for commercial crop production and are thus ploughed, irrigated, harvested and replanted on a regular basis.	• Fallow lands should be allowed to rehabilitate and ultimately contribute to the grassland conservation effort. • Cultivated lands should be keenly managed to ensure that they do not impact on the conservation of sensitive biodiversity features of the MNR (wetlands and seeps, riparian areas and rivers, etc.)	• Provision of cultivation for commercial crop production. • Limited opportunities for species conservation	• N/A	• No specific restrictions
VIEWSHED PROTECTION ZONE	• The Viewshed Protection Zone defines areas adjacent to the MNR , that are visually exposed to the MNR . To the extent that any major development within this area will have a significant negative visual impact on the MNR .	• The management authority of the MNR should remain vigilant to any potential large scale developments within this area (especially mining operations), and should engage in any EIA related processes within this area.	N/A	N/A	N/A

4. ADMINISTRATIVE STRUCTURE

MTPA is the provincial conservation authority responsible for proclaiming MNR under Section 23(1) of the National Environmental Management: Protected Areas Act (Act 57 of 2003).

The Middelpunt Nature Reserve Landowners Association (MNRLA) is appointed as the Management Authority of the reserve. The Members of the Middelpunt Nature Reserve Landowners Association are the registered landowners of the properties comprising the reserve.

Dullstroom Trout Farm is managed by one part-time manager (Janine; 082 565 6220) and three full-time staff members.

Eland's Valley is managed by two part-time managers (Bright and Lizzie; 084 821 3033) and four full-time staff members (Charlos, Glara, Lloyd, and Francisco).

The MNRLA has three lease agreements: two lease agreements with R J Combrink & Seun Familie Trust for cattle grazing and the other with Middelpunt Wetland Trust for wetland conservation. Signed leases are archived on the online repository.

Co-management agreement

There is a co-management agreement between MNRLA, BirdLife South Africa and Middelpunt Wetland Trust that came into effect on 31 July 2022.

The aims and objects of the Co-Management Agreement are:

- to allow BirdLife South Africa and the Middelpunt Wetland Trust to provide advice to the Management Authority of MNR about the conservation and the best management practice of Middelpunt Wetland and the surrounding grassland habitat;
- to influence habitat management in a manner that is beneficial to the local population of White-winged Flufftail;
- to promote sustainable management of the MNR in a manner that creates long-term continuity of local agricultural and recreational activities, and water provisioning and other ecosystem services to the broader community;
- to promote this management regime based on scientifically collected and rigorous ecological data;
- to transfer ecological knowledge to the Management Authority over time to ensure the long-term continuity of management;
- to assist the Management Authority in the development of "Internal Rules" of the Management Plan, which will guide the management philosophy of the reserve and will bind all parties through these provisions, including any lessees of land in the reserve;
- to ensure that the natural resources within MNR are utilised for the benefit of the reserve and its biodiversity values in a sustainable manner such that:

- the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; and
- that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised.

- to support the Management Authority in relation to all matters concerning the reserve and, in agreement with the Management Authority, to represent the parties in dealing with government departments, other authorities and the public generally on all such matters;
- to take such action as may be required to promote or ensure the continued existence of the reserve; and
- to explore potential fund-raising opportunities as they may arise.

Co-management meetings

- The Parties agreed that advisory interactions will take place on a continued *ad hoc* basis, as interactions are required.
- However, as a minimum, all parties to the agreement shall meet at least once during each year (preferably during the month of September or October) to conduct an annual assessment of the management activities, including:
  - A review of the management plan;
  - A review of any recent scientific studies or other assessments;
  - The drafting of an Annual Plan of Operation, outlining the management activities required for the subsequent year, together with a costing plan;
  - The drafting of an annual management report to be submitted to the provincial conservation governing body, Mpumalanga Tourism and Parks Agency (MTPA).

Management Authority Executive Committee

The interests and activities of the Management Authority shall be managed by a four-member Executive Committee (EC). Each Landowner shall be entitled to appoint two members to the EC. Each of the co-management partners shall be invited to act as officers to advise the EC. Officers shall not be entitled to vote at an EC meeting.

Executive Committee Meetings

EC meetings shall be convened when any EC member in writing requests such a meeting to be convened. A quorum shall be comprised of at least two committee members, one of which must have been appointed by each Landowner group. EC decisions shall be made by voting. In the event of the voting being equal, the Chairperson shall have the casting vote.

General Meetings

The annual general meeting of the Management Authority shall take place within the calendar year. The financial year shall terminate at the end of February of every year. The co-management partners shall be invited to attend general meetings. Both members shall be required to form a quorum. In the absence of such a quorum, the members present may adjourn the meeting for a period of 14 days where members present at the adjourned date will automatically constitute a quorum. Members may appoint representatives to vote on their behalf by written proxy. Decisions shall be taken by a majority vote, each Member shall have one vote. In the event of the voting at a general meeting being equal, the procedures specified in the Dispute Resolution clause shall apply.

Finances

The Management Authority shall open an account at a bank and/or other approved financial institution. The income of the Management Authority shall be deposited in the account. Any two EC members shall be empowered to withdraw funds for the use by the MNRLA. Proper records shall be kept of all finances of the MNRLA as set out in the regulations published in terms of the NPO (non-profit organization) Act No. 71 of 1997. A financial report shall be produced by the EC at the annual general meeting or upon request from a Landowner. Financial contributions can be collected from all persons and/or organizations, worldwide, which support the objectives of MNRLA. No Member shall be held responsible for any expense. Contributions towards the expenses of the MNRLA are on a strictly voluntary basis.

Mpumalanga Tourism and Parks Agency

MTPA will provide advice within their capacity as and when needed.

5. MANAGEMENT PLAN IMPLEMENTATION, REVIEW AND ANNUAL PLAN OF OPERATION

5.1 Annual Plan of Operation

Monitoring and reporting enable the effective assessment of management interventions. If necessary, it can be used to direct modifications of management to achieve the outcomes required.

The Annual Plan of Operation (APO) forms and integral part of the Protected Area Management Plan. The APO gives life to the Operational Management Framework in the Strategic Management Plan by listing specific management actions.

To facilitate effective review, each management action comprises the following components:

- The Key Performance Area (KPA), and its various sub-sections.
- The KPA Objective.
- The plan for the year.
- A description of the management actions.
- The budget assigned to the activity.
- The evidence of the management action.
- The person responsible for implementation of the management action.
- Priority ranking and status of each management action.
- The deadline for completion.

The APO for MNR will be captured in a separate Excel document which is directly linked to the management plan and will be one of the main tools used to measure management effectiveness during annual evaluations and providing the framework for the annual report. Either as part of the review process or directly after the review, the reserve management team should compile the list of management actions for the following year's APO.

The following steps should be taken:

- Review performance of previous year's management actions under each KPA. Make note of actual performance relative to the objectives set. Discuss challenges experienced and ways to overcome them.
- Revise the Objectives, Responsible Party, Budget and Deadlines if necessary. If the Objective used previously was found to be an ineffective indicator, specify a new KPA Objective.

5.2 Management Plan Review

The purpose of the annual evaluations and reports will assist with the Management Plan review by determining be to how effective the management plan has been implemented; assist with setting of appropriate time frames and budgets; and enable effective adaptive management by identifying changes and modifying management interventions. This will also be assisted by the minuted annual general meeting discussions.

On a five-yearly basis, this Management Plan will be reviewed and adjusted where necessary. To achieve this, the following questions (and others as needed) will be addressed:

- Did this Management Plan make a meaningful contribution to management of the Protected Area?
- Were individual management "prescriptions" realistic and achievable? Were they written unambiguously or was there room for misunderstanding?
- Were budgets for each management activity realistic? Were the allocated budgets too much or too little?
- Were sufficient staff members of the right qualifications allocated to each management activity?

5.3 Five-year Costing Plan

Below is an estimated breakdown of management costs for each management objective over the five-year period of this Management Plan. The figures listed below are realistic in-terms of MNRLA forecasted budget at the time of drafting this plan. The detailed budgets in the successive Annual Plan of Operation will override this costing estimate.

Table 6: Estimated annual management cost breakdown.

	2023	2024	2025	2026	2027	2028
Income	R 12 500	R 60 000	R 63 000	R 66 150	R 69 458	R 72 930
Donations	R 250 000					
Revenue	**R 262 500**	**R 60 000**	**R 63 000**	**R 66 150**	**R 69 458**	**R 72 930**

	2023	2024	2025	2026	2027	2028
Veld Assessment	R -	R 15 000	R -	R 16 538	R -	R 18 233
Signage	R 12 500	R -	R -	R -	R -	R -
Firebreaks	R -	R 8 000	R 8 400	R 8 820	R 9 261	R 9 724
Fencing	R -	R 10 000	R 10 500	R 11 025	R 11 576	R 12 155
Alien invasives	R -	R 3 500	R 3 675	R 3 859	R 4 052	R 4 254
Memberships	R -	R 3 000	R 3 150	R 3 308	R 3 473	R 3 647
Banking	R -	R 1 500	R 1 575	R 1 654	R 1 736	R 1 823
Game friendly fencing	R 250 000	R -	R -	R -	R -	R -
Miscellaneous	R -	R 3 000	R 3 150	R 3 308	R 3 473	R 3 647
Cost	**R 262 500**	**R 44 000**	**R 30 450**	**R 48 510**	**R 33 571**	**R 53 482**
Surplus / Deficit	**R -**	**R 16 000**	**R 32 550**	**R 17 640**	**R 35 886**	**R 19 448**
Accumulated Surplus / Deficit	**R -**	**R 44 000**	**R 74 450**	**R 122 960**	**R 156 531**	**R 210 013**

5.4 Monitoring and Reporting

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

In terms of **section 43** of the Act:

(1) The Minister may establish indicators for monitoring performance with regard to the management of national protected areas and the conservation of biological diversity in those areas.

(2) The MEC may establish indicators for monitoring performance with regard to the management of provincial and local protected areas and the conservation of biodiversity in those areas.

(3) The management authority of a protected area must-

(a) monitor the area against the indicators set in terms of subsection (1) or (2); and
(b) annually report its findings to the Minister, or a person designated by the Minister.

(4) The Minister may appoint external auditors to monitor the management authority's compliance with the overall objectives of the management plan.

5.4.1 Annual Monitoring

The annual monitoring schedule should be designed to monitor the implementation of aspects of the management plan. It should be designed to be straightforward and relatively easy to implement.

Records should be maintained of key management interventions and of problem events or incidents such as uncontrolled access, poaching, illegal plant collection or uncontrolled/arson fires.

Scientific monitoring programmes may be established to monitor specific management interventions such as measures for the protection of threatened and endemic species. Most of the outcomes of the monitoring process will be captured in an annual report, which will be used to inform the following year's annual plan of operation.

On this basis, a monitoring schedule for MNR will be reflected in the APO.

5.4.2 Annual Reporting

Annual reports based on the APO will be submitted in October every year to Mpumalanga Tourism and Parks Agency.

6. APPENDICIES

6.1 APPENDIX A: List of Statutes to which the Nature Reserve is subject

Biodiversity and Cultural Resource Management and Development:

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

General Management:

- Companies Act [No.71 of 2008]
- Promotion of Access to Information Act [No. 2 of 2000]
- Occupational Health and Safety Act [No. 85 of 1993]
- Development Facilitation Act [No. 67 of 1995]
- Disaster Management Act [No. 57 of 2002]
- Fire Brigade Services Act [No. 99 of 1987]
- Local Government: Municipal Systems Act [No. 32 of 2000]
- National Road Traffic Act [No. 93 of 1996]
- National Building Standards Act [No. 103 of 1977]
- Water Services Act [No. 108 of 1997]

Human Resource Management:

- Basic Conditions of Employment Act [No. 75 of 1997]
- Broad-Based Black Economic Empowerment Act [No. 53 of 2003]
- Compensation for Occupational Injuries and Diseases Act [No. 130 of 1993]

- Employment Equity Act [No. 55 of 1998]
- Labour Relations Act [No. 66 of 1995]
- Occupational Health and Safety Act [No. 85 of 1993]
- Pension Funds Act [No. 24 of 1956]
- Skills Development Act [No. 97 of 1998]
- Skills Development Levies Act [No. 9 of 1999]
- Unemployment Insurance Act [No. 63 of 2001]

A brief summary of the most applicable legislation:

Protected Areas are proclaimed under section 23(1) of the National Environmental Protected Areas Act, 57 of 2003, ("the Protected Areas Act").

- **Protected Areas Act (Act No. 57 of 2003)**

The *[Minister/MEC]* is empowered, under section 23(1) of the National Environmental Protected Areas Act, 57 of 2003, ("the Protected Areas Act") to declare an area as a Conservation Area if:

1. It has significant natural features or biodiversity;
2. Is in need of long-term protection for the maintenance of its biodiversity or for the provision of environmental goods and services.

Biodiversity management agreements

The Minister may enter into a biodiversity management agreement with the person, organization or organ of state identified in terms of section 43(2), or any other suitable person, organization or organ of state, regarding the implementation of a biodiversity management plan, or any aspect of it.

- **Biodiversity Act (Act No. 10 Of 2004)**

Objectives of Act

a) within the framework of the National Environmental Management Act, to provide for—

i. the management and conservation of biological diversity within the Republic and of the components of such biological diversity;
ii. ii. the use of indigenous biological resources in a sustainable manner; and
iii. the fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources;

b) to give effect to ratified international agreements relating to biodiversity which are binding on the Republic;

c) to provide for co-operative governance in biodiversity management and conservation; and

d) to provide for a South African National Biodiversity Institute to assist in achieving the objectives of this Act.

- **National Veld and Forest Fire Act (Act No. 101 of 1998)**

Purpose

'The purpose of the Act is to prevent and combat veld, forest and mountain fires throughout the Republic.''

Firebreaks

In terms of section 12 and 14 every landowner must prepare and maintain a firebreak as determined in section 13. Failure to do so is an offence in terms of section 25(3), unless he has been exempted by the Minister in terms of section 15.

Fighting Preparedness

There is also a further duty on landowners to have equipment, protective clothing and trained personnel available in the eventuality that there may be fire on their property (section 17). Failure to meet this requirement is an offence in terms of section 25(4).

- **Conservation of Agricultural Resources Act, 1983 (No 43 of 1983)**

Purpose

CARA is an act of the National Department of Agriculture and makes provision for the conservation of the natural agricultural resources of South Africa through:

i. Maintaining the production potential of land;
ii. Combating and preventing erosion;
iii. Preventing the weakening or destruction of water sources;
iv. Protecting the vegetation; and
v. Combating weeds and invader plants.

Other Relevant Legislation:

- Municipal Systems Act
- National Water Act, 1998 (No 36 of 1998)
- Constitution of the Republic of South Africa Act, 1996 (No 108 of 1996)
- Environment Conservation Act No 73 of 1989
- Forest Act No 122 of 1984
- National Environmental Management Act, 1998 (No 107 of 1998)
- National Heritage Resources Act, 1999 (No 25 of 1999)
- World Heritage Convention Act, 1999 (No 109 of 1999)
- Mountain Catchment Areas Act, 1970 (Act No. 63 of 1970)
- The administration of the Act has been assigned to the Board by virtue of Act 3 of 2000 as published in Provincial Gazette Extraordinary No. 5442 dated 24 March 2000
- Land Use Planning Ordinance 15/1985 (section 29)

There may be other legislation applicable to Middelpunt Nature Reserve and it is the landowner and MNRLA's responsibility to identify and comply with applicable legislation.

6.2 APPENDIX B: Copy of Nature Reserve Proclamation.

PROVINCIAL NOTICE 211 OF 2022

WITHDRAWAL OF PART OF A PROTECTED ENVIRONMENT AND DECLARATION OF A NATURE RESERVE IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT, 2003 (ACT NO. 57 of 2003) (AS AMENDED)

Notice is hereby given by the Member of the Executive Council (MEC) for the Department of Agriculture, Rural Development, Land and Environmental Affairs in Mpumalanga Province, Ms. Busisiwe Paulina Shiba, in terms of section 23 (1) (a) (i) and (b) of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (as amended) of the declaration of the **Middelpunt Nature Reserve**, located in the Emakhazeni Local Municipality on the properties, the boundaries of which are described in Addendum 1 hereto and to withdraw the same properties as defined in Addendum 1 as part of the Greater Lakenvlei Protected Environment, in terms of Section 29 (a) of the National Environmental Management: Protected Areas Act (2003)

The purpose of the declaration of the **Middelpunt Nature Reserve** is as follows:

> 'to protect the area if the area has significant natural features or biodiversity' (S 23 (2) (b) (i)); and
> 'is in need of long-term protection for the maintenance of its biodiversity or for the provision of environmental goods and services' (S23 (2) (b) (iii)).

The properties defined in Addendum 1 were declared as part of the Greater Lakenvlei Protected Environment (Mpumalanga Provincial Gazette No. 2800, Notice 30 of 2017) on the 7th April 2017.

Addendum 1: Description of the Middelpunt Nature Reserve

Property Description
Remaining extent of Portion 9 of the farm Middelpunt, No. 320; situated in the Emakhazeni Local Municipality; Division JT; Mpumalanga Province; measuring 326,6070 (Three two six comma six zero seven zero) hectares; held by Deed of Transfer No. T107617/2002
Portion 11 (Portion of Portion 1) of the farm Elandsfontein; No. 322; situated in the Emakhazeni Local Municipality; Division JT, Mpumalanga Province; measuring 200,0000 (Two zero zero comma zero zero zero zero) hectares; held by Deed of Transfer No. T 54455/2000

6.3 APPENDIX C: Copy of Nature Reserve Ramsar Designation

Ramsar
CONVENTION ON WETLANDS
CONVENTION SUR LES ZONES HUMIDES
CONVENCIÓN SOBRE LOS HUMEDALES

This is to certify that

Middelpunt Nature Reserve

has been designated as a

Wetland of International Importance

and has been included in the
List of Wetlands of International Importance
established by Article 2.1 of the Convention.
This is site No: 2501

Dr Musonda Mumba
Secretary General
Convention on Wetlands

Date of designation: *15 March 2023*

6.4 APPENDIX D: Servitude Register

Servitude	Property	Party agreement	Start Year	Access	Duration
Transmission Powerlines (~2.25 km with bird flaps)	Dulltroom Trout Farm (Middelpunt 320 JT portion 9)	Eskom Holdings SOC Ltd		Unrestricted	Indefinitely

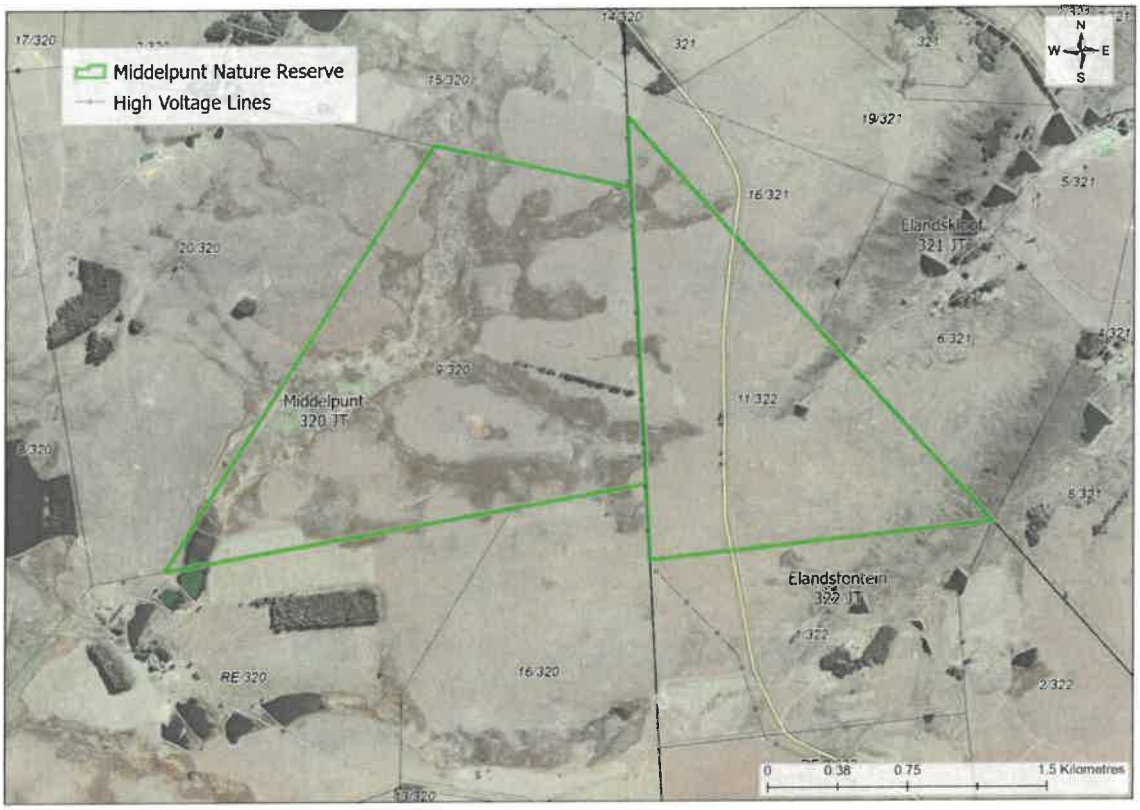

Figure 11: Map of Middelpunt Nature Reserve including the Eskom transmission powerlines.

6.5 APPENDIX E: Fire Response Plan

PURPOSE

The purpose of the Fire Response Plan (FRP) is to provide management measures and controls to prevent and control fires. The FRP covers the prevention and control of both ecological burns and uncontrolled and unplanned veld fires. The procedures are aimed at providing a safe environment, protecting infrastructure from fire, as well as allowing for the use of fire in ecological management. This FRP includes all the requirements of the National Veld and Forest Fire Act, Act No. 101 of 1998 (NVFFA). This document also lays out the procedure to be followed by the Emergency Response Team in firefighting operations.

FIRE PROTECTION ASSOCIATION

The landowner or representative of the landowner should join the Mpumalanga Escarpment Platorand Area Fire Protection Association (PAFPA). The yearly contract renewal with PAFPA will be filed in the online repository for Middelpunt Nature Reserve.

FIRE MANAGEMENT

In terms of Section 17 of the National Veld and Forest Fire Act No. 101 of 1998, a landowner (in this case MNRLA) must have sufficient firefighting equipment, protective clothing and trained personnel for extinguishing fires as may be prescribed or, if not prescribed, reasonably required in the circumstances. It is therefore necessary to consider the following in relation to firefighting:

- The need to maintain a system of firebreaks to enable the management of controlled burns and to effectively fight wildfires.
- The size of the Nature Reserve and the requirements necessary to access different areas in the event of a wildfire. This relates to both roads and vehicles.
- The number of personnel necessary to effectively fight wildfires.
- The equipment necessary to effectively fight wildfires.

Veld Fire Prevention through Firebreaks

Chapter 4 of the NVFFA places a duty on the landowner to prepare and maintain firebreaks. Firebreaks should be coordinated with neighbours and prepared appropriately on either side of the boundary, or on a single side through neighbour mutual agreement. If a firebreak is prepared or maintained by burning, this must be done on a mutually agreed date or dates with the owners of adjoining land, while the Fire Protection Association (FPA) for the area, if any, must be informed. If an agreement cannot be reached, the owner or owners' representative must give the owners of the adjoining land and the FPA for the area, if any, at least 14 days written notice of the day or days during which he or she intends burning firebreaks, fire danger permitting. An owner of adjoining land who has agreed on a day or who receives a notice of intent to burn a firebreak must burn his or her firebreak on the boundary concerned on the same day or days; or be present at such burning or have his or her agent attend; and ensure that a sufficient number of persons are present on his or her side of the boundary to prevent any spread of fire when the firebreak is burned. A firebreak may not however be burned if FPA objects

to the proposed burning; if a fire warning has been published because the fire danger is high in the region; or if the conditions are not conducive to the burning of firebreaks. The owner or the representative must inform the owners of adjoining land and the FPA, if burning cannot be done on the agreed or planned day or days and of the new days on which he or she intends to burn because of the failure to do so on the initial days planned. It is not necessary for the owner to give 14 days' notice of the additional days. Owners of adjoining land may agree to position a common firebreak away from the boundary.

Requirements for Firebreaks

It must be ensured that, with due regard to the weather, terrain and vegetation of the area, the firebreak is wide enough (30-50 m) and long enough to have a reasonable chance of preventing a veldfire from spreading to or from neighbouring land; that it does not cause soil erosion; and that it is reasonably free of inflammable material capable of carrying a veldfire across it. The layout of firebreaks should be linked to access roads, thereby reducing the areas requiring preparation and increasing accessibility to the various sites or site areas. Firebreaks are required around the perimeter of the property and should also be put in place around all infrastructure.

Middelpunt Nature Reserve Firebreaks

There are two firebreaks which are burnt annually to protect portion 9. The first is along the fence line of the northern boundary and the second is along the fence line which forms the southern boundary of portion 9. In addition, every 3 or 4 years prior to the burning of the permanent Lakenvlei wetland a firebreak is burnt on the eastern side of this wetland.

Burning firebreaks and the control of unplanned fires resides with the persons leasing the grazing although the staff at Elands Valley and the Dullstroom Trout Farm will assist if required in the control of unplanned fires.

Firefighting Preparedness

Equipment, protective clothing, and trained personnel must be always available on the site to fight and extinguish any fires. Adjacent landowners and the relevant FPA must be alerted immediately of any fires. Should any fire endanger life, property, or the environment then steps must be taken to notify the fire protection officer in the area, or any member of the executive committee of the FPA and everything must be done to stop the spread of the fire. In the absence of any fire protection officer, any person may enter land, and perform the necessary activities to prevent the fire from spreading further.

The following firefighting equipment should be on the property:

- Hand tools, including fire beaters, spades, and knapsack sprayers.
- Water tankers and pressure pumps pulled behind tractors.
- Firefighting equipment mounted on the backs of vehicles.

- Other equipment – Spotlight, torches (headlamps), bolt cutters, and First Aid Kit with burn shields (1 per team).
- All personnel MUST have the following protective clothing: boots, gloves, goggles, breathing masks and hard hats.

Firefighting equipment shall be serviced in accordance with the manufacturer's instructions and at intervals not exceeding the manufacturer's statutory requirements (annually). Vehicles will be maintained in a good and running order receiving regular services. Fire extinguishers shall be serviced at least once a year. A register of inspection of firefighting equipment is to be kept. All firefighting equipment shall be in positions that are readily accessible and clearly visible. Only trained employees may use firefighting equipment. Firefighting equipment must be stored in a designated storage area on site. The items, and the number of each item, required must be determined by the Environmental and Health and Safety Departments.

Table 7: Firefighting equipment of Middelpunt Nature Reserve.

Property	Equipment	Quantity
Elands Valley	Portable trailer water tank with pump	1
	Quad bike	3
	Fire beater	Multiple
Dullstroom Trout Farm	Bakkie sakkie	1
	Portable trailer water tank	1
	Fire beater	1

All personnel on-site with a responsibility of fire management MUST be appropriately trained in fire management and should update their fire training accredited certificates at least every two years, or at an appropriate interval.

ECOLOGICAL MANAGEMENT

Africa's rangelands have evolved because of and alongside fire as a natural feature in the landscape. Fire has also been used as a rangeland management tool by pastoralists for centuries. Fire can be a good servant if used correctly but can become a wicked master when abused. It is a useful tool to remove excess moribund material from the grass sward, to allow for the re-growth of palatable material, to control encroaching vegetation and to burn firebreaks. The way in which we use fire is, however, important to achieve a positive outcome.

It is a well-researched fact that fire has a significant deleterious effect on grassland as it destroys the growing point of the grass tiller which leads to a temporary reduction in grass growing vigour. Burning can reduce the total production of dry matter by up to 30%. That is why it is recommended that burning only takes place in the dormant season following the rest season of the management unit. The rest season will enhance the growing vigour of the grass plant which would then cancel out the effect of burning. Burning too early leads to unnecessary exposure of the bare soil surface, burning too late results in drastic defoliation of new growth, and burning too frequently reduces the organic matter necessary to ameliorate infiltration, support the soil microbes that drive the nutrient cycles and basal

cover which reduces run-off and soil erosion. The correct use of fire would therefore be at the correct time of year, within the correct set of environmental conditions and at an appropriate frequency.

Fire plays an important role in the ecological dynamics of grasslands and wetlands, and has important effects on vegetation composition, primary productivity, and nutrient cycling. In developing burning and fire management strategies for Middelpunt Nature Reserve, the following guiding principles should be adhered to:

- Burning should be undertaken in such a way that it maintains spatial and temporal heterogeneity of the vegetation within the landscape.
- A patch mosaic of burnt and un-burnt areas should be maintained.
- Burning must be undertaken with due consideration to the biodiversity conservation requirements of the Nature Reserve and the need to protect rare and endangered species.
- Burning and fire management must be undertaken in a safe manner that is legally compliant with the National Veld and Forest Fire Act No. 101 of 1998.

Objectives of Ecological Fire Management

Fire plays an important role in the ecological dynamics of grassland and wetland ecosystems, and has important effects on vegetation composition, primary productivity, and nutrient cycling. Burning will be implemented at Middelpunt Nature Reserve to manage the grassland and wetland vegetation, by removing moribund vegetation. Fuel loads will need to be managed with livestock grazing as this is the primary source of revenue generated from the reserve, particularly in times of above and below average rainfall. Given that a large portion of MNR comprises wetland habitat and that the conservation of wetland birds is one of the main objectives, the burning regimes of grasslands should follow the guidelines stipulated for wetlands.

FIRE MANAGEMENT PLAN REVIEW

At minimum, this Plan should undergo an annual review, with input as appropriate from stakeholders and the FPA. The Plan should be reviewed in the event of:

- Significant changes to response capabilities and contractors for the operating area.
- Relevant changes on site.
- Changes on the facilities covered by this Plan in each operating area.
- Relevant changes to this Plan as required by new regulatory requirements.
- Following significant incidents, drills/exercises, as necessary.

6.6 APPENDIX F: Species Lists

6.6.1 Plant Species List

REGIONAL STATUS[1]	COMMON NAME	BOTANICAL NAME
Forbs		
LC		*Cyrtanthus macowanii*
LC		*Disperis cooperi*
LC	Sundew	*Drosera madagascariensis*
LC	Pineapple Lily	*Eucomis autumnalis*
LC		*Eucomis montana*
VU	Crinkle-leaf Pineapple Lily	*Eucomis vandermerwei*
LC		*Fuirena ciliaris*
LC		*Gladiolus appendiculatus*
LC		*Gladiolus varius*
LC		*Gladiolus vernus*
LC		*Persicaria decipiens*
NE	Spotted Knotweed	*Persicaria lapathifolia*
LC	Jersey Cudweed	*Pseudognaphalium luteo-album*
LC		*Senecio inornatus*
Rare		*Streptocarpus latens*
LC		*Utricularia prehensilis*
Sedges & other wetland species		
LC		*Ascolepis capensis*
LC	Cat's Tail Sedge	*Carex rhodesiaca* (*Carex austro-africana*)
LC		*Carex cognata*
LC		*Cyperus denudatus*
LC		*Eleocharis dregeana* (*Eleocharis palustris*)
LC		*Fuirena ciliaris*
LC		*Isolepis costata*
LC		*Juncus oxycarpus*
LC		*Pycreus nitidus*
NE		*Schoenoplectus brachyceras*
LC	Bulrush	*Typha capensis*
Grasses		
LC	Agrostis	*Agrostis eriantha*
NE	Fog Grass	*Agrostis montevidensis*
LC	Black-seed Grass	*Alloteropsis semialata*
LC	Vlei Bluestem	*Andropogon appendiculatus*
LC	Hairy Bluegrass	*Andropogon chinensis*
LC	Snowflake Grass	*Andropogon eucomus*
LC	Stab Grass	*Andropogon schirensis*
LC	Ngongoni Three-awn	*Aristida junciformis*
LC	Rock Three-awn	*Aristida transvaalensis*
LC	River Grass	*Arundinella nepalensis*
LC	Velvet Signal Grass	*Brachiaria serrata*
LC	Klein Rietjiesgras	*Calamagrostis epigejos* subsp. *capensis*

LC	Brown Finger Grass	*Digitaria brazzae*
LC	False Couch Grass	*Digitaria cf. longiflora*
LC	One-finger Grass	*Digitaria monodactyla*
LC	Fine-leaved Finger Grass	*Digitaria setifolia*
LC	Purple Finger Grass	*Digitaria tricholaenoides*
LC	Thread-leaved Bluestem	*Diheteropogon filifolius*
LC	Wire Grass	*Elionurus muticus*
LC	Heart-seed Love Grass	*Eragrostis capensis*
LC	Blacksmith's Grass	*Eragrostis cf. aspera*
LC	Curly-leaf Lovegrass	*Eragrostis chloromelas*
LC	Weeping Love Grass	*Eragrostis curvula*
LC	Swamp Eragrostis	*Eragrostis patentissima*
LC	Tough Love Grass	*Eragrostis plana*
LC	Narrow Heart Love Grass	*Eragrostis racemosa*
LC	Caterpillar Grass	*Harpochloa falx*
LC	Spear Grass	*Heteropogon contortus*
LC	Common Thatching Grass	*Hyparrhenia hirta*
LC	Koeleria	*Koeleria capensis*
LC	Cutgrass	*Leersia hexandra*
LC	Pincushion Grass	*Microchloa caffra*
LC	Boat Grass	*Monocymbium ceresiiforme*
LC	Small Panicum	*Panicum ecklonii*
LC	Natal Panicum	*Panicum natalense*
NE	Dallis Grass	*Paspalum dilatatum*
LC	Bulgrass	*Pennisetum sphacelatum*
LC	Common Reed	*Phragmites australis*
LC	Rootstock Manna Grass	*Setaria nigrirostris*
LC	Manna Grass	*Setaria sphacelata*
LC	Ratstail Dropseed	*Sporobolus africanus*
LC	Stiburus	*Stiburus alopecuroides*
LC	Red Grass	*Themeda triandra*
LC	Giant Spear Grass	*Trachypogon spicatus*
LC	Hairy Trident Grass	*Tristachya leucothrix*

[1]**LC** = Least Concern; **VU** = Vulnerable; **NE** = Not Evaluated

6.6.2 Bird Species List

COMMON NAME	SCIENTIFIC NAME	REGIONAL STATUS[1]	ENDEMISM[2]
Apalis, Bar-throated	*Apalis thoracica*	LC	
Avocet, Pied	*Recurvirostra avosetta*	LC	
Barbet, Black-collared	*Lybius torquatus*	LC	
Barbet, Crested	*Trachyphonus vaillantii*	LC	
Batis, Chinspot	*Batis molitor*	LC	
Bee-eater, European	*Merops apiaster*	LC	
Bee-eater, Swallow-tailed	*Merops hirundineus*	LC	
Bee-eater, White-fronted	*Merops bullockoides*	LC	
Bishop, Southern Red	*Euplectes orix*	LC	
Bishop, Yellow	*Euplectes capensis*	LC	
Bittern, Little	*Ixobrychus minutus*	LC	
Bokmakierie	*Telophorus zeylonus*	LC	
Boubou, Southern	*Laniarius ferrugineus*	LC	
Bulbul, Dark-capped	*Pycnonotus tricolor*	LC	
Bunting, Cinnamon-breasted	*Emberiza tahapisi*	LC	
Bunting, Golden-breasted	*Emberiza flaviventris*	LC	
Bustard, Black-bellied	*Lissotis melanogaster*	LC	
Bustard, Denham's	*Neotis denhami*	VU	
Buttonquail, Common (Kurrichane)	*Turnix sylvaticus*	LC	
Buzzard, Common (Steppe)	*Buteo buteo*	LC	
Buzzard, Jackal	*Buteo rufofuscus*	LC	NE
Canary, Black-throated	*Crithagra atrogularis*	LC	
Canary, Cape	*Serinus canicollis*	LC	
Canary, Yellow	*Crithagra flaviventris*	LC	
Chat, Ant-eating	*Myrmecocichla formicivora*	LC	
Chat, Buff-streaked	*Campicoloides bifasciatus*	LC	SLS
Chat, Familiar	*Oenanthe familiaris*	LC	
Cisticola, Cloud	*Cisticola textrix*	LC	NE
Cisticola, Lazy	*Cisticola aberrans*	LC	
Cisticola, Levaillant's	*Cisticola tinniens*	LC	
Cisticola, Pale-crowned	*Cisticola cinnamomeus*	LC	
Cisticola, Wailing	*Cisticola lais*	LC	
Cisticola, Zitting	*Cisticola juncidis*	LC	
Coot, Red-knobbed	*Fulica cristata*	LC	
Cormorant, Reed	*Microcarbo africanus*	LC	
Cormorant, White-breasted	*Phalacrocorax lucidus*	LC	
Coucal, Burchell's	*Centropus burchellii*	LC	
Crake, Black	*Zapornia flavirostra*	LC	
Crake, Corn	*Crex crex*	LC	
Crane, Blue	*Grus paradisea*	NT	
Crane, Grey Crowned	*Balearica regulorum*	EN	
Crane, Wattled	*Grus carunculata*	CR	
Crow, Cape	*Corvus capensis*	LC	
Crow, Pied	*Corvus albus*	LC	
Cuckoo, Black	*Cuculus clamosus*	LC	
Cuckoo, Diederik	*Chrysococcyx caprius*	LC	
Cuckoo, Klaas's	*Chrysococcyx klaas*	LC	
Cuckoo, Red-chested	*Cuculus solitarius*	LC	
Cuckooshrike, Black	*Campephaga flava*	LC	
Darter, African	*Anhinga rufa*	LC	
Dove, Cape Turtle (Ring-necked)	*Streptopelia capicola*	LC	
Dove, Laughing	*Spilopelia senegalensis*	LC	
Dove, Namaqua	*Oena capensis*	LC	
Dove, Red-eyed	*Streptopelia semitorquata*	LC	
Dove, Rock	*Columba livia*	LC	
Drongo, Fork-tailed	*Dicrurus adsimilis*	LC	
Duck, African Black	*Anas sparsa*	LC	

Duck, Fulvous Whistling	*Dendrocygna bicolor*	LC	
Duck, Knob-billed	*Sarkidiornis melanotos*	LC	
Duck, Maccoa	*Oxyura maccoa*	NT	
Duck, White-backed	*Thalassornis leuconotus*	LC	
Duck, White-faced Whistling	*Dendrocygna viduata*	LC	
Duck, Yellow-billed	*Anas undulata*	LC	
Eagle, African Fish	*Haliaeetus vocifer*	LC	
Eagle, Black-chested Snake	*Circaetus pectoralis*	LC	
Eagle, Brown Snake	*Circaetus cinereus*	LC	
Eagle, Long-crested	*Lophaetus occipitalis*	LC	
Eagle, Verreaux's	*Aquila verreauxii*	VU	
Egret, Great	*Ardea alba*	LC	
Egret, Little	*Egretta garzetta*	LC	
Egret, Western Cattle	*Bubulcus ibis*	LC	
Egret, Yellow-billed (Intermediate)	*Ardea intermedia*	LC	
Falcon, Amur	*Falco amurensis*	LC	
Falcon, Lanner	*Falco biarmicus*	VU	
Falcon, Peregrine	*Falco peregrinus*	LC	
Finch, Cuckoo	*Anomalospiza imberbis*	LC	
Fiscal, Southern (Common)	*Lanius collaris*	LC	
Flamingo, Greater	*Phoenicopterus roseus*	NT	
Flufftail, Red-chested	*Sarothrura rufa*	LC	
Flufftail, White-winged	*Sarothrura ayresi*	CR	
Flycatcher, African Dusky	*Muscicapa adusta*	LC	
Flycatcher, African Paradise	*Terpsiphone viridis*	LC	
Flycatcher, Ashy	*Muscicapa caerulescens*	LC	
Flycatcher, Fiscal	*Melaenornis silens*	LC	NE
Flycatcher, Southern Black	*Melaenornis pammelaina*	LC	
Flycatcher, Spotted	*Muscicapa striata*	LC	
Francolin, Grey-winged	*Scleroptila afra*	LC	SLS
Francolin, Red-winged	*Scleroptila levaillantii*	LC	
Gallinule, (American) Purple	*Porphyrio martinica*	LC	
Goose, Egyptian	*Alopochen aegyptiaca*	LC	
Goose, Spur-winged	*Plectropterus gambensis*	LC	
Goshawk, African	*Accipiter tachiro*	LC	
Grassbird, Cape	*Sphenoeacus afer*	LC	NE
Grebe, Great Crested	*Podiceps cristatus*	LC	
Grebe, Little	*Tachybaptus ruficollis*	LC	
Greenshank, Common	*Tringa nebularia*	LC	
Guineafowl, Helmeted	*Numida meleagris*	LC	
Hamerkop	*Scopus umbretta*	LC	
Harrier, African Marsh	*Circus ranivorus*	EN	
Harrier, Pallid	*Circus macrourus*	NT	
Hawk, African Harrier-	*Polyboroides typus*	LC	
Helmet-shrike, White-crested	*Prionops plumatus*	LC	
Heron, Black-crowned Night	*Nycticorax nycticorax*	LC	
Heron, Black-headed	*Ardea melanocephala*	LC	
Heron, Green-backed (Striated)	*Butorides striata*	LC	
Heron, Grey	*Ardea cinerea*	LC	
Heron, Purple	*Ardea purpurea*	LC	
Heron, Squacco	*Ardeola ralloides*	LC	
Honeybird, Brown-backed	*Prodotiscus regulus*	LC	
Honeyguide, Greater	*Indicator indicator*	LC	
Hoopoe, African	*Upupa africana*	LC	
Ibis, African Sacred	*Threskiornis aethiopicus*	LC	
Ibis, Glossy	*Plegadis falcinellus*	LC	
Ibis, Hadeda (Hadada)	*Bostrychia hagedash*	LC	
Ibis, Southern Bald	*Geronticus calvus*	VU	SLS
Jacana, African	*Actophilornis africanus*	LC	
Jacana, Lesser	*Microparra capensis*	VU	
Kestrel, Lesser	*Falco naumanni*	LC	

Kestrel, Rock	*Falco rupicolus*	LC	
Kingfisher, Giant	*Megaceryle maxima*	LC	
Kingfisher, Malachite	*Corythornis cristatus*	LC	
Kingfisher, Pied	*Ceryle rudis*	LC	
Kite, Black-winged	*Elanus caeruleus*	LC	
Kite, Yellow-billed	*Milvus aegyptius*	LC	
Korhaan (Bustard), White-bellied	*Eupodotis senegalensis*	VU	
Korhaan, Blue	*Eupodotis caerulescens*	LC	SLS
Lapwing, African Wattled	*Vanellus senegallus*	LC	
Lapwing, Blacksmith	*Vanellus armatus*	LC	
Lapwing, Black-winged	*Vanellus melanopterus*	LC	
Lapwing, Crowned	*Vanellus coronatus*	LC	
Lark, Eastern Long-billed	*Certhilauda semitorquata*	LC	SLS
Lark, Red-capped	*Calandrella cinerea*	LC	
Lark, Spike-heeled	*Chersomanes albofasciata*	LC	
Longclaw, Cape	*Macronyx capensis*	LC	
Longclaw, Yellow-throated	*Macronyx croceus*	LC	
Mallard	*Anas platyrhynchos*	LC	
Martin, Banded	*Neophedina cincta*	LC	
Martin, Brown-throated	*Riparia paludicola*	LC	
Martin, Common House	*Delichon urbicum*	LC	
Martin, Sand	*Riparia riparia*	LC	
Moorhen, Common	*Gallinula chloropus*	LC	
Moorhen, Lesser	*Paragallinula angulata*	LC	
Mousebird, Speckled	*Colius striatus*	LC	
Myna, Common	*Acridotheres tristis*	LC	
Neddicky	*Cisticola fulvicapilla*	LC	
Nightjar, Fiery-necked	*Caprimulgus pectoralis*	LC	
Oriole, Black-headed	*Oriolus larvatus*	LC	
Osprey, Western	*Pandion haliaetus*	LC	
Ostrich, Common	*Struthio camelus*	LC	
Owl, African Grass	*Tyto capensis*	VU	
Owl, Cape Eagle-	*Bubo capensis*	LC	
Owl, Marsh	*Asio capensis*	LC	
Owl, Spotted Eagle-	*Bubo africanus*	LC	
Owl, Western Barn	*Tyto alba*	LC	
Peafowl, Indian	*Pavo cristatus*	LC	
Pigeon, African Olive	*Columba arquatrix*	LC	
Pigeon, Speckled	*Columba guinea*	LC	
Pipit, African	*Anthus cinnamomeus*	LC	
Pipit, Buffy	*Anthus vaalensis*	LC	
Pipit, Plain-backed	*Anthus leucophrys*	LC	
Pipit, Yellow-breasted	*Anthus chloris*	VU	E
Plover, Three-banded	*Charadrius tricollaris*	LC	
Pochard, Southern	*Netta erythrophthalma*	LC	
Prinia, Black-chested	*Prinia flavicans*	LC	
Prinia, Drakensberg	*Prinia hypoxantha*	LC	SLS
Prinia, Karoo	*Prinia maculosa*	LC	NE
Prinia, Tawny-flanked	*Prinia subflava*	LC	
Quail, Common	*Coturnix coturnix*	LC	
Quail-finch, African	*Ortygospiza atricollis*	LC	
Quelea, Red-billed	*Quelea quelea*	LC	
Rail, African	*Rallus caerulescens*	LC	
Robin-chat, Cape	*Cossypha caffra*	LC	
Robin-chat, Chorister	*Cossypha dichroa*	LC	SLS
Robin-chat, White-throated	*Cossypha humeralis*	LC	
Roller, European	*Coracias garrulus*	NT	
Ruff	*Calidris pugnax*	LC	
Sandpiper, Common	*Actitis hypoleucos*	LC	
Sandpiper, Wood	*Tringa glareola*	LC	
Saw-wing, Black	*Psalidoprocne pristoptera*	LC	

Secretarybird	*Sagittarius serpentarius*	VU	
Seedeater, Streaky-headed	*Crithagra gularis*	LC	
Shoveler, Cape	*Spatula smithii*	LC	
Shrike, Red-backed	*Lanius collurio*	LC	
Snipe, African	*Gallinago nigripennis*	LC	
Sparrow, Cape	*Passer melanurus*	LC	
Sparrow, House	*Passer domesticus*	LC	
Sparrow, Southern Grey-headed	*Passer diffusus*	LC	
Sparrowhawk, Black	*Accipiter melanoleucus*	LC	
Sparrowhawk, Rufous-breasted	*Accipiter rufiventris*	LC	
Spoonbill, African	*Platalea alba*	LC	
Spurfowl, Natal	*Pternistis natalensis*	LC	
Spurfowl, Swainson's	*Pternistis swainsonii*	LC	
Starling, Cape Glossy (Cape)	*Lamprotornis nitens*	LC	
Starling, Pied	*Lamprotornis bicolor*	LC	SLS
Starling, Red-winged	*Onychognathus morio*	LC	
Starling, Wattled	*Creatophora cinerea*	LC	
Stilt, Black-winged	*Himantopus himantopus*	LC	
Stint, Little	*Calidris minuta*	LC	
Stonechat, African	*Saxicola torquatus*	LC	
Stork, White	*Ciconia ciconia*	LC	
Sunbird, Greater Double-collared	*Cinnyris afer*	LC	SLS
Sunbird, Malachite	*Nectarinia famosa*	LC	
Sunbird, White-bellied	*Cinnyris talatala*	LC	
Swallow, Barn	*Hirundo rustica*	LC	
Swallow, Greater Striped	*Cecropis cucullata*	LC	
Swallow, Lesser Striped	*Cecropis abyssinica*	LC	
Swallow, Red-breasted	*Cecropis semirufa*	LC	
Swallow, South African Cliff	*Petrochelidon spilodera*	LC	BNE
Swallow, White-throated	*Hirundo albigularis*	LC	
Swamphen, African (Purple)	*Porphyrio madagascariensis*	LC	
Swift, African Black	*Apus barbatus*	LC	
Swift, Alpine	*Tachymarptis melba*	LC	
Swift, Common	*Apus apus*	LC	
Swift, Horus	*Apus horus*	LC	
Swift, Little	*Apus affinis*	LC	
Swift, White-rumped	*Apus caffer*	LC	
Teal, Red-billed	*Anas erythrorhyncha*	LC	
Tern, Whiskered	*Chlidonias hybrida*	LC	
Tern, White-winged	*Chlidonias leucopterus*	LC	
Thick-knee, Spotted	*Burhinus capensis*	LC	
Thrush, Cape Rock	*Monticola rupestris*	LC	SLS
Thrush, Groundscraper	*Turdus litsitsirupa*	LC	
Thrush, Kurrichane	*Turdus libonyana*	LC	
Thrush, Olive	*Turdus olivaceus*	LC	
Thrush, Sentinel Rock	*Monticola explorator*	LC	SLS
Vulture, Cape	*Gyps coprotheres*	EN	
Vulture, White-backed	*Gyps africanus*	CR	
Wagtail, African Pied	*Motacilla aguimp*	LC	
Wagtail, Cape	*Motacilla capensis*	LC	
Warbler, Broad-tailed (Fan-tailed Grassbird)	*Schoenicola platyurus*	LC	
Warbler, Lesser Swamp	*Acrocephalus gracilirostris*	LC	
Warbler, Little Rush	*Bradypterus baboecala*	LC	
Warbler, Marsh	*Acrocephalus palustris*	LC	
Warbler, Willow	*Phylloscopus trochilus*	LC	
Waxbill, Common	*Estrilda astrild*	LC	
Waxbill, Orange-breasted	*Amandava subflava*	LC	
Weaver, Cape	*Ploceus capensis*	LC	NE
Weaver, Lesser Masked	*Ploceus intermedius*	LC	
Weaver, Southern Masked	*Ploceus velatus*	LC	
Wheatear, Capped	*Oenanthe pileata*	LC	

Wheatear, Mountain	*Myrmecocichla monticola*	LC	
White-eye, Cape	*Zosterops virens*	LC	NE
Whydah, Pin-tailed	*Vidua macroura*	LC	
Widowbird, Fan-tailed	*Euplectes axillaris*	LC	
Widowbird, Long-tailed	*Euplectes progne*	LC	
Widowbird, Red-collared	*Euplectes ardens*	LC	
Woodpecker, Cardinal	*Dendropicos fuscescens*	LC	
Woodpecker, Ground	*Geocolaptes olivaceus*	LC	SLS
Woodpecker, Olive	*Dendropicos griseocephalus*	LC	
Wryneck, Red-throated	*Jynx ruficollis*	LC	

[1]**LC** = Least Concern; **NT** = Near Threatened; **VU** = Vulnerable; **EN** = Endangered; **CR** = Critically Endangered (Regional)

[2]**E** = Endemic to South Africa; **NE** = Near Endemic to South Africa (~70% or more of the population in RSA); **SLS** = Endemic to South Africa, Lesotho and the Kingdom of Eswatini; **BNE** = Breeding near endemic

6.6.3 Mammal Species List

FAMILY	SCIENTIFIC NAME	COMMON NAME	REGIONAL STATUS[1]
Bovidae	*Damaliscus pygargus phillipsi*	Blesbok	LC
Bovidae	*Ourebia ourebi ourebi*	Oribi	EN
Bovidae	*Raphicerus campestris*	Steenbok	LC
Bovidae	*Sylvicapra grimmia*	Common Duiker	LC
Chrysochloridae	*Chrysospalax villosus*	Rough-haired Golden Mole	VU
Canidae	*Lupulella adusta*	Side-striped Jackal	LC
Cervidae	*Dama dama*	Fallow deer	NEMBA Category 2 invasive species
Chrysochloridae	*Chlorotalpa sclateri*	Sclater's Golden Mole	LC
Chrysochloridae	*Neamblysomus julianae*	Juliana's Golden Mole	EN
Chrysochloridae	*Amblysomus robustus*	Robust Golden Mole	VU
Felidae	*Caracal caracal*	Caracal	LC
Felidae	*Felis nigripes*	Black-footed Cat	VU
Felidae	*Leptailurus serval*	Serval	NT
Herpestidae	*Atilax paludinosus*	Water Mongoose	LC
Hyaenidae	*Proteles cristatus*	Aardwolf	LC
Leporidae	*Lepus saxatilis*	Scrub hare	LC
Leporidae	*Pronolagus crassicaudatus*	Natal Red Rock Hare	LC
Manidae	*Smutsia temminckii*	Ground Pangolin	VU
Miniopteridae	*Miniopterus fraterculus*	Lesser Long-fingered Bat	LC
Muridae	*Otomys laminatus*	Laminate Vlei Rat	NT
Mustelidae	*Aonyx capensis*	African Clawless Otter	LC
Mustelidae	*Hydrictis maculicollis*	Spotted-necked Otter	VU
Mustelidae	*Poecilogale albinucha*	African Striped Weasel	SE
Orycteropodidae	*Orycteropus afer*	Aardvark	LC
Rhinolophidae	*Rhinolophus blasii*	Blasius's Horseshoe Bat	LC
Rhinonycteridae	*Cloeotis percivali*	Short-eared Trident Bat	EN
Suidae	*Potamochoerus larvatus*	Bushpig	LC
Vespertilionidae	*Myotis welwitschii*	Welwitsch's Hairy Bat	LC

[1]**LC** = Least Concern; **NT** = Near Threatened; **VU** = Vulnerable; **SE** = Sensitive; **EN** = Endangered

6.5.4 Reptile, Amphibian and Invertebrate Species List

FAMILY	SCIENTIFIC NAME	COMMON NAME	REGIONAL STATUS[1]
Potamonautidae	*Potamonautes flavusjo*	Yellowcrest River Crab	NE
Nymphalidae	*Serradinga clarki amissivallis*	Verloren Valei Bronze-Speckled Widow	VU

[1]**NE** = Not Evaluated; **VU** = Vulnerable

6.7 APPENDIX G: Veld Condition Site Reports

Summary of the Veld Condition Site Reports for 2018, 2019 and 2020 of Dullstroom Trout Farm.

Site	Date	Veld condition	Veld condition trend	Grazing capacity	Management strategy
DT 1	2018	Good	This is baseline data.	3.6 – 3.9 ha per LAU	Rest for forage reserve from July 2019 to June 2020. Burn (cool fire) in June 2020. Apply High Production Grazing.
	2019	Slightly Overgrazed	Veld condition deteriorated slightly.	3.8 – 3.9 ha per LAU	Protect against fire and grazing in 2019. Apply light grazing (HPG) in 2020, not to overgraze palatable species. Grazing of the grass length of palatable species should be to 10 cm (not shorter).
	2020	Overgrazed	Trend negative in grass composition and cover.	3.7 – 3.8 ha per LAU	Protect against fire and grazing in 2020 - rest this camp at least until spring 2021. Apply light grazing until trend is reversed. Grazing levels should not be lower than 1.5 tons/ha.
DT 8	2019	Good	This is baseline data.	3.4 – 3.7 ha per LAU	Protect against fire in 2019. Apply light grazing (HPG) in order not to overgraze the palatable species. Grazing of palatable grasses should be to 10 cm length, not shorter.
	2020	Good	Too early to detect trend.	3.7 – 3.9 ha per LAU	Protect against fire and grazing in 2020 - rest this camp at least until spring 2021. Apply light grazing for a few years. Grazing levels should not be lower than 1.5 tons/ha.

6.8 APPENDIX H: Control of Problem Plants

Excerpts from the Guide for the Control of Problem Plants South Africa, 2022 compiled by Kathy van Zyl of the most common problem plant species in Middelpunt Nature Reserve.

Acacia mearnsii Black wattle (E) Swartwattel (A) Idywabasi, Iwatlisi (X) Umtholo wesilungu, Uwatela (Z) NEMBA category 2 (exemptions in existing plantations)			
Aerial application	hexazinone 750 g/kg WG	2,6 - 3,2 kg/ha	Only for use in *Pinus* plantations in the Cape and Natal and non-crop areas elsewhere.
	Unizone 750 WDG (L8363); Villex 750 WDG (L8364)		
Basal stem	hexazinone 750 g/kg WG	1 kg/3 ℓ water	Only for use in *Pinus* plantations in the Cape and Natal and non-crop areas elsewhere. Apply 1 x 2 - 6 x 2 mℓ doses per stem diameter
	Unizone 750 WDG (L8363); Villex 750 WDG (L8364)		
	triclopyr 29 g/ℓ AL	Apply undiluted	Apply as a coarse, low pressure spray around the basal stem or trunk from a height of 50 cm down to soil level.
	Turbodor 29 mpa (L10365)		
	triclopyr 480 g/ℓ EC	200 mℓ/10 ℓ diesel	Ensure thorough wetting of the root crown, exposed roots and stem up to a height of 0,25 m.
	Expyrt 480 EC (L10282); Garlon 480 EC (L4916); Triclon (L6661); Nuvogon 480 EC (L6704); Viroaxe (L6663); Vulture 480 EC (L10047)		
Cut stump	aminopyralid/triclopyr 12/120 g/ℓ SL	200 mℓ/10 ℓ water	Apply to low cut stumps (10 – 20 cm high) preferably with a single cut surface. Apply to complete cut surface of stumps with a diameter of less than 10 cm. For bigger stumps, apply to the cambial region (sapwood) of the cut surface. In all cases, apply until the point of run-off
	Confront Super 132 (L8772)		
	clopyralid/triclopyr 90/270 g/ℓ SL	200 mℓ/10 ℓ water + 50 mℓ mineral oil	Apply to low cut stumps (10 – 20 cm high) preferably with a single cut surface. Apply to complete cut surface of stumps with a diameter of less than 10 cm. For bigger stumps, apply to the cambial region (sapwood) of the cut surface. In all cases, apply until the point of run-off
	Astra 360 SL (L8429); Confront 360 SL (L7314); Contest 360 SL (L10337)		
	fluroxypyr/picloram 80/80 g/ℓ ME	200 mℓ/10 ℓ water + 50 mℓ mineral oil	Apply to low cut stumps preferably with a single cut surface. For bigger stumps, apply to the cambial region of the cut surface and root crown. In all cases, apply until the point of run-off.
	Assembly 160 ME (L10593); Gladiator 160 ME (L9846); Mafia (L9724); Plenum 160 ME (L7702); Quorum 160 ME (L10048)		
	imazapyr 100 g/ℓ SL	1 ℓ/10 ℓ water	Apply to the sapwood region of freshly cut-stump surfaces using a low pressure applicator.
	Hatchet (L7409)		
	imazapyr 250 g/ℓ SL	400 mℓ/10 ℓ water	Apply to the sapwood region of freshly cut-stump surfaces using a low pressure applicator.
	Invade 250 SL (L10093)		
	picloram 240 g/ℓ SL	150 mℓ/10 ℓ water + 50 mℓ mineral oil	Apply to low cut stumps. Where multiple stems are present, all cut surfaces must be treated until point of run-off. For bigger stumps apply to the cambial region of the cut surface.
	Access 240 SL (L4920); Adequate 240 SL (L10138); Browser (L7357); Picloram (L8299) (L10044); Radiate (L9569); Scrubber 240 SL (L9306); Tordon 22K (L6871)		
	picloram/triclopyr 50/50 g/kg AL	Apply 1 mm undiluted gel	Apply directly onto the stump of freshly cut trees by means of a flexible 25 - 50 mm paint brush.
	Kaput 100 Gel (L8855)		
	triclopyr 29 g/ℓ AL	Apply undiluted	Apply as a coarse, low pressure spray. Wet top and sides of cut stumps and any exposed roots down to soil level.
	Turbodor 29 mpa (L10365)		

Acacia mearnsii Black wattle (E) Swartwattel (A) Idywabasi, Iwatlisi (X) Umtholo wesilungu, Uwatela (Z) NEMBA category 2 (exemptions in existing plantations)			
Cut stump	triclopyr 480 g/ℓ EC	200 mℓ/10 ℓ diesel	Apply to low cut stumps (10 - 150 cm high).
	Expyrt 480 EC (L10282); Vulture 480 EC (L10047)		
	triclopyr 360 g/ℓ SL	300 mℓ/10 ℓ water + 50 mℓ mineral oil	Apply to low cut stumps (10 - 20 cm high).
	Lumberjack 360 SL (L7295); Timbrel 360 SL (L4917)		
Foliar application	aminopyralid/triclopyr 12/120 g/ℓ SL	50 mℓ/10 ℓ water + 50 mℓ mineral oil	Apply to young actively growing trees (saplings) up to 2 meters in height until the point of run-off. Slash plant too high for good cover spray and re-spray when not less than 0,5 m high.
	Confront Super 132 (L8772)		
	aminopyralid/triclopyr 30/240 g/ℓ EW	25 mℓ/10 ℓ water + 50 mℓ mineral oil	Apply to young actively growing trees (saplings) up to 2 meters in height until the point of run-off.
	Garlon Max 270 EW (L8511)		
	clopyralid 100 g/ℓ SL	3 ℓ/ha	Only for use in Eucalyptus and Pine forests.
	Lancer 100 SL (L9423); Lontrel 100 SL (L4919)		
	clopyralid 200 g/ℓ SL	1.5 ℓ/ha	Only for use in Eucalyptus and Pine forests.
	Zone (L9916)		
	clopyralid/triclopyr 90/270 g/ℓ SL	30 - 50 mℓ/10 ℓ water	Use the lower rate for seedlings (smaller than 50 cm in height) and the higher rate for saplings. Apply until the point of run-off.
	Astra 360 SL (L8429); Confront 360 SL (L7314); Contest 360 SL (L10337)		
	fluroxypyr 200 g/ℓ EC	12,5 mℓ/10 ℓ water + 50 mℓ mineral oil	Apply on actively growing plants up to 1 m in height. Ensure complete droplet coverage of leaves and stems.
	Cardinal 200 EC (L9928); Fluroxypyr 200 EC (L10327); FriXon (L8399); Sabre 200 EC (L9845); Solstar (L7968); Solnox (L10223); Starane 200 EC (L4918); Terminal 200 EC (L9926); Tomahawk 200 EC (L6652); Voloxypyr 200 EC (L7776)		
	fluroxypyr/picloram 80/80 g/ℓ ME	12,5 mℓ/10 ℓ water + 50 mℓ mineral oil	Apply to actively growing plants. Apply until the point of run-off. Plants too high for a good cover spray should be slashed and the re-growth sprayed when not less than 0,5 m high.
	Assembly 160 ME (L10593); Gladiator 160 ME (L9846); Mafia (L9724); Plenum 160 ME (L7702) ; Quorum 160 ME (L10048)		
	fluroxypyr/triclopyr EC 320/160 g/ℓ	33 mℓ/10 ℓ water	Apply to actively growing plants. Add an adjuvant at the rate of 50 mℓ/10 ℓ water
	Impala 480 EC (L9879)		
	glyphosate 16,4 g a.e./ℓ AL (ammonium)	Apply undiluted	Apply in summer to young trees from 0,1 to 2,0 m high to point of run-off.
	Wipe Out RTU (L8583)		

Acacia mearnsii Black wattle (E) Swartwattel (A) Idywabasi, Iwatlisi (X) Umtholo wesilungu, Uwatela (Z) NEMBA category 2 (exemptions in existing plantations)			
Foliar application	glyphosate 680 g a.e./kg SG (ammonium)	80 g/10 ℓ water	Spray plants up to 1 m high.
	Roundup Max (L6790)		
	glyphosate 687 g a.e./kg WG (ammonium)	100 g/10 ℓ water	Spray plants up to 1 m high.
	Glyphogan Plus (L10700)		
	glyphosate 710 g a.e./kg SG (ammonium)	75 g/10 ℓ water (1,55 kg/ha)	Apply in summer to young trees from 0,1 to 2,0 m high.
	Glygran 710 SG (L8449); Lynch 710 SG (L8670); Slash 710 SG (L8450)		
	glyphosate 500 g a.e./kg WG (ammonium)	100 mℓ/10 ℓ water	Spray seedlings and re-growth up to 1 m high
	Myrmidon (L9705); Sharda Glyphosate 500 WG (L8900)		
	glyphosate 480 g a.e./ℓ SL (dimethylamine salt)	110 mℓ/10 ℓ water	Spray plants up to 1 m high
	Mamba DMA 480 SL (L8388)		
	glyphosate 240 g a.e./ℓ SL (isopropylamine salt)	112,5 - 150 mℓ/10 ℓ water	Summer-autumn application. Apply using a handgun on plant up to 2 m high.
	Tumbleweed (L4781)		
	glyphosate 360 g a.e./ℓ SL (isopropylamine salt)	150 mℓ/10 ℓ water	Apply as a full cover spray to young trees up to 1 - 2 m high.
	Various products - refer to Table A		
	glyphosate 480 g a.e./ℓ SL (isopropylamine salt)	110 mℓ/10 ℓ water	Spray plants up to 1 m high.
	Mamba Max 480 SL (L7714)		
	glyphosate 510 g a.e./ℓ SL (isopropylamine salt)	100 mℓ/10 ℓ water	Apply to young trees up to 1 m high
	Kalach 510 SL (L8311); Piranha 510 SL (L9314); Silvinator (L9850)		
	glyphosate 360 g a.e./ℓ SL (potassium salt)	150 mℓ/10 ℓ water	Apply as a full cover spray to young trees up to 1 - 2 m high.
	Grafton 360 SL (L10113); Roundup (L0407)		
	glyphosate 450 g a.e./ℓ SL (potassium salt)	120 mℓ/10 ℓ water	Apply in summer to young trees from 0,1 - 2 m high.
	Bounty 450 SL (L10698); Lynch Turbo 450 SL (L8754); Panga Turbo 450 SL (L8506); Roundup Turbo (L7166)		

Acacia mearnsii Black wattle (E) Swartwattel (A) Idywabasi, Iwatlisi (X) Umtholo wesilungu, Uwatela (Z) NEMBA category 2 (exemptions in existing plantations)			
Foliar application	glyphosate 500 g a.e./ℓ SL (potassium salt)	100 mℓ/10 ℓ water	Apply in summer to young trees from 0,1 - 2 m high.
	Touchdown Forte Hi Tech (L7305)		
	glyphosate 540 g a.e./ℓ SL (potassium salt)	80 - 100 mℓ/10 ℓ water	Spray plants up to 1 m in height.
	Adama Glyphosate 540 SL (L11050); Flatdown (L10737); Glynox 540 SL (L10937); Glyphosate 540 SL (L10745); Grafton 540 SL (L11033); Lynch Plus 540 SL (L08816); Panga Plus 540 SL (L08818); Slash Plus 540 SL (L8819); Stroper (L10793)		
	glyphosate 600 g a.e./ℓ SL (potassium salt)	1,8 ℓ/ha	Apply in summer to young trees from 0,1 - 2 m high
	Lynch High-Load 600 SL (L10055); Slash High-Load 600 SL (L9734)		
	glyphosate 500 g a.e./kg WG (sodium salt)	110 - 150 g/10 ℓ water	Apply lower rate to seedlings up to 1 m high and the higher rate to seedling higher than 1 m as well as to shrubs/trees that have been slashes and allowed to re-grow to 1 m high.
	Glyphosate WSG (L7119); Kilo WSG (L7431)		
	glyphosate 709 g a.e./kg WG (sodium salt)	78 - 107 g/10 ℓ water	Apply lower rate to seedlings up to 1 m high and the higher rate to seedling higher than 1 m as well as to shrubs/trees that have been slashes and allowed to re-grow to 1 m high.
	Kilo Max (L8310)		
	glyphosate 800 g a.e./kg WG	68 g/10 ℓ water	Apply as full cover spray to young trees up to 1 m high
	Bazooka (L10718)		
	hexazinone 750 g/kg WG	1,6 - 2,4 kg/ha	Only for use in *Pinus* plantations in the Cape and Natal and non-crop areas elsewhere. Dosage depends on size of seedlings. Only for use on seedlings up to 3 m high
	Unizone 750 WDG (L8363); Villex 750 WDG (L8364)		
	triclopyr 480 g/ℓ EC	25-75 mℓ/10 ℓ water + 50 mℓ mineral oil	Lower rate can be used on sapling <50 cm high and higher rate on trees up to 2 m high.
	Expyrt 480 EC (L10282); Garlon 4 (L3249); Garlon 480 EC (L4916); Nuvogon 480 EC (L6704); Tribel 480 EC (L7964); Triclon (L6661); Trimax E (L7666); Tripyr 480 EC (L10112); Viroaxe (L6663); Vulture 480 EC (L10047)		
	triclopyr 600 g/kg WG	20 - 60 g/10 ℓ water + 50 mℓ mineral oil	Apply only to plants less than 2 m high. Dosage depends on plant height
	Triclomax 600 SG (L9482)		

Acacia mearnsii Black wattle (E) Swartwattel (A) Idywabasi, Iwatlisi (X) Umtholo wesilungu, Uwatela (Z) NEMBA category 2 (exemptions in existing plantations)			
Frill application	picloram 240 g/ℓ SL	600 mℓ/10 ℓ water + 200 mℓ mineral oil	Apply sufficient mixture to fill the frill without unnecessary wastage down the bark
	Access 240 SL (L4920); Browser (L7357); Picloram 240 SL (L8299) (L10044); Radiate (L9569); Scrubber 240 SL (L9306); Tordon 22K (L6871)		
	triclopyr 360 g/ℓ SL	400 mℓ/10 ℓ water + 50 mℓ adjuvant	Apply sufficient mixture to fill the frill. Stem diameter should not exceed 10 cm
	Timbrel 360 SL (L4917)		
Soil application	bromacil 500 g/ℓ SC	1,5 ℓ/2 ℓ water	Using an automatic vaccinator, apply one dose (2 mℓ) to the soil at the base of the plant. Apply one additional dose for every 0,5 m increase in tree height. Do not exceed eight doses per tree.
	Bombacil (L9730); Bromastop 500 SC (L10177); Bushwhacker SC (L6706)		
	tebuthiuron 500 g/ℓ SC	1,5 ℓ/2,25 ℓ water	Apply on the soil at the base of the target plant. For seedlings use 2 mℓ/plant; trees up to 1 m use 2 x 2 mℓ/tree; trees 1 - 2 m use 3 - 4 x 2 mℓ/tree; for each additional meter above 2 m use 2 x 2 mℓ
	CapaciT (L9584); Molopo 500 SC (L5854); Teburon 500 SC (L10226); Uniron 500 SC (L10227)		

Eucalyptus spp Gum trees (E) Bloekom (A) NEMBA category 1b and 2 depending on area (with exemptions			
Soil application	tebuthiuron 500 g/ℓ SC	1,5 ℓ/1 ℓ water	Use 3 - 4x2 mℓ/stump.
	Molopo 500 SC (L5854)		