THE TERRESTRIAL BIODIVERSITY ASSESSMENT FOR THE PROPOSED BUFFELSPOORT SOLAR PHOTOVOLTAIC (PV) ENERGY FACILITY

Mooinooi, North West Province

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CLIENT

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1 Introduction

1.1 Background

The Biodiversity Company was appointed to undertake a terrestrial ecology impact assessment for the proposed Buffelspoort Solar Photovoltaic (PV) Energy Facility on Portions 75 and 134 of the Farm Buffelspoort 343 JQ, and its associated infrastructure near Mooinooi (Figure 1-1). The proposed facility is located approximately 6 km west of Mooinooi, within jurisdiction of the Rustenburg Local Municipality and the Bojanala Platinum District Municipality in the North West Province

A Project Area of Influence (PAOI) was created to incorporate the proposed Bufferlspoort ESIA development footprint, Substation as well as the Buffelspoort OHL and represents the total area assessed (Figure 1-2).

This assessment was conducted in accordance with the amendments to the Environmental Impact Assessment Regulations, 2014 (No. 326, as amended 7 April 2017) of the National Environmental Management Act, 1998 (Act No. 107 of 1998). The assessment approach has taken cognisance of the recently published Government Notice No. 320 in terms of NEMA dated March 2020: "*Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation*". The National Web based Environmental Screening Tool has characterised the terrestrial biodiversity for the project area as "very high sensitivity".

The purpose of the specialist studies is to provide relevant input into the impact assessment process and to provide a report for the proposed activities associated with the development of the Solar PV Energy Facility. This report, after taking into consideration the findings and recommendations provided by the specialist herein, should inform and guide the Environmental Assessment Practitioner (EAP) and regulatory authorities, enabling informed decision making, as to the ecological viability of the proposed facility.

1.2 Project

The proposed project will have a contracted capacity of up to 40 MW. The purpose of the Solar PV Energy Facility will be to supply power to a private off-taker by connecting the Facility via a newly proposed ~2.5 km long 88kV single circuit overhead power line that will be routed over Privately owned properties from the onsite Facility substation to the point of interconnection, north of the N4. The development, construction and operation of the Solar PV Energy Facility aims to enable the private off-taker to diversify their energy mix and to reduce their reliance on Eskom supplied power and is a conscious effort for the off-taker to contribute to their sustainability targets and reduce their carbon footprint. A grid connection corridor which varies in width from 200 m to 300 m and is up to 2.5 km in length has been identified for the assessment and suitable placement of the grid connection infrastructure. This corridor will provide for the avoidance of sensitive environment areas and technical constraints. A Development Footprint of up to ~77 ha has been identified within the PAIO by the Buffelspoort Solar Project (Pty) Ltd for the development of the Buffelspoort Solar PV Energy Facility.

Infrastructure associated with the Buffelspoort Solar PV Energy Facility will include the following:

- Solar PV arrays comprising PV panels and mounting structures;
- Inverters and transformers;
- Cabling between the arrays;
- Onsite facility substation;
- 88kV single circuit overhead power line for the distribution of the generated power, which will be connected to an existing 88kV Substation just north of the proposed Project site;

- Battery Energy Storage System (BESS)[1] – to be initiated at a later stage than the Solar PV Energy Facility;
- Temporary laydown area;
- Operations and Maintenance (O&M) building, which will include a site security office, warehouse, storage area and workshop;
- Main access road (existing – to be upgraded with hard surface) and internal (new) gravel roads; and
- Fencing around the site, including an access gate and security point.

[1] The BESS is included as part of the ESIA process albeit that the facility will only be installed after the Solar PV Energy Facility has come into operation. The total electricity requirements for the offtaker is currently under review and an energy master plan is being developed, which will only be finalised post implementation of the Solar PV Energy Facility to address all the electricity needs of the offtaker. The BESS has been included in this ESIA in order to ensure that should the energy master plan require this component to be included sooner than expected that it has already been authorized.

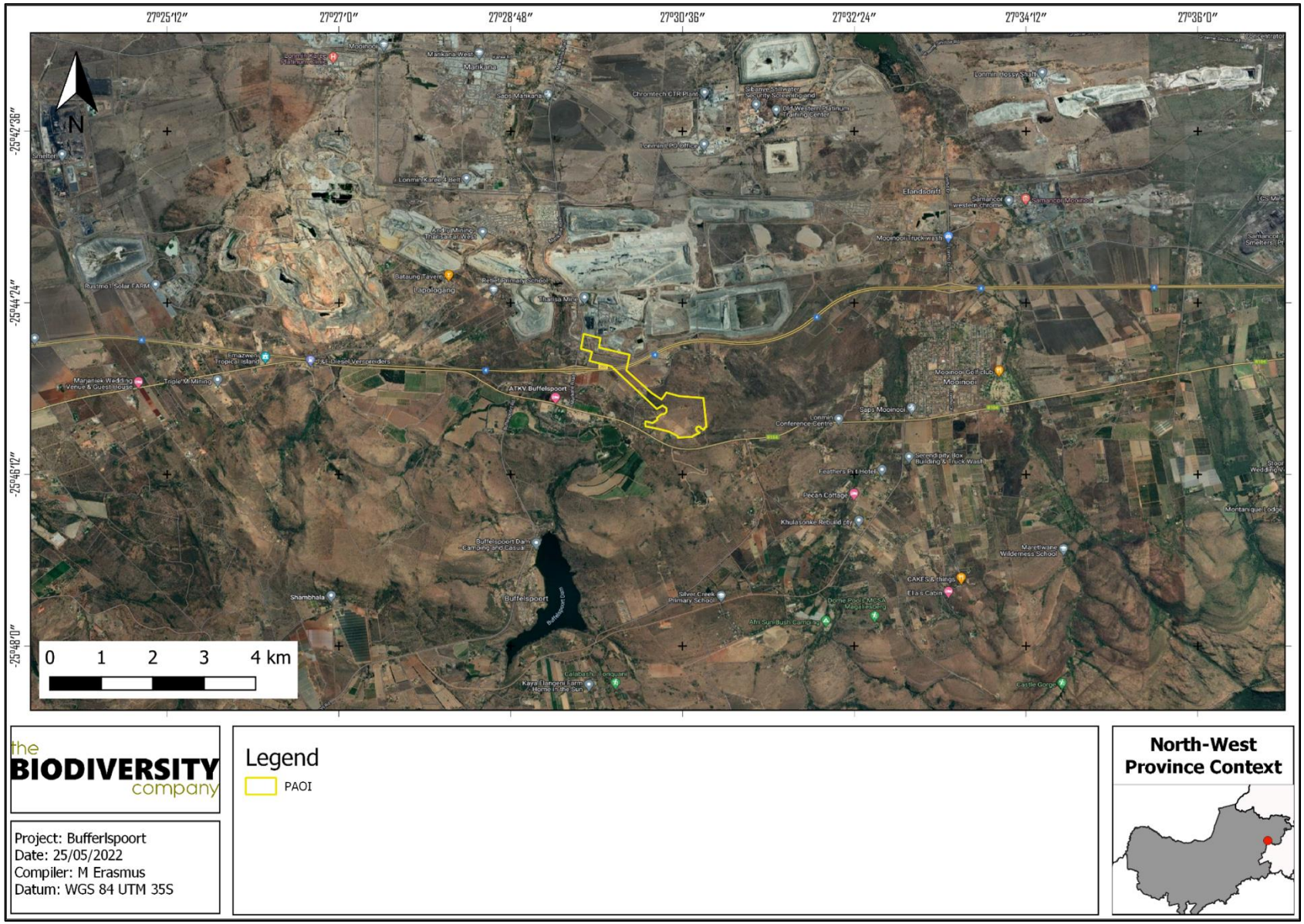

Figure 1-1 Proposed location of the PAOI in relation to the nearby towns

Figure 1-2 The PAOI on a local scale

1.3 Specialist Details

Report Name	**THE TERRESTRIAL BIODIVERSITY ASSESSMENT FOR THE PROPOSED BUFFELSPOORT SOLAR PHOTOVOLTAIC (PV) ENERGY FACILITY**
Reference	**Buffelspoort Solar PV Energy Facility**
Submitted to	savannah environmental
Report Writer and Fieldwork	**Martinus Erasmus** 
	Martinus Erasmus obtained his B-Tech degree in Nature Conservation in 2016 at the Tshwane University of Technology. Martinus has been conducting EIAs, basic assessments and assisting specialists in field during his studies since 2015. Martinus is Cand. Sci. Nat. registered (118630) is a specialist terrestrial ecologist and botanist which conducts floral surveys faunal surveys which include mammals, birds, amphibians and reptiles.
Reviewer	**Andrew Husted** 
	Andrew Husted is Pr Sci Nat registered (400213/11) in the following fields of practice: Ecological Science, Environmental Science and Aquatic Science. Andrew is an Aquatic, Wetland and Biodiversity Specialist with more than 12 years' experience in the environmental consulting field. Andrew has completed numerous wetland training courses, and is an accredited wetland practitioner, recognised by the DWS, and also the Mondi Wetlands programme as a competent wetland consultant.
Declaration	The Biodiversity Company and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the Environmental Impact Assessment Regulations, 2017. We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time and budget) based on the principals of science.

1.4 Terms of Reference

The Terms of Reference (ToR) included the following:

- Description of the baseline receiving environment specific to the field of expertise (general surrounding area as well as PAIO specific environment);
- Identification and description of any sensitive receptors in terms of relevant specialist disciplines (biodiversity) that occur in the PAOI, and the manner in which these sensitive receptors may be affected by the activity;
- Identify 'significant' ecological, botanical and faunal features within the proposed PAOI;
- Identification of conservation significant habitats around the PAOI which might be impacted;
- Screening to identify any critical issues (potential fatal flaws) that may result in Project delays or rejection of the application;
- Provide a map to identify sensitive receptors in the PAOI, based on available maps and database information;
- Conduct impact assessments relevant to the proposed activity; and
- Impact assessment, mitigation and rehabilitation measures to prevent or reduce the possible impacts.

1.5 Assumptions and Limitations

The following assumptions and limitations are applicable for this assessment:

- The assessment area was based on the spatial data provided by the client and any alterations to the route and/or missing Geographic Information System (GIS) information pertaining to the assessment area would have affected the area surveyed;
- The assessment area was only surveyed during a single field survey and therefore, this assessment does not consider temporal trends; however sufficient to derive meaningful baseline
- Due to the time of sampling (autumn, early dry-season) some of the vegetation was dry and most plants had already lost the green winter flush. Also, the spring dominant non-succulent annuals were not detectable; and
- The Global Positioning System (GPS) used in the assessment has an accuracy of 5 m and consequently any spatial features may be offset by 5 m.

1.6 Key Legislative Requirements

The legislation, policies and guidelines listed below in Table 1-1 are applicable to the proposed Project. The list below, although extensive, may not be complete and other legislation, policies and guidelines may apply in addition to those listed below.

Table 1-1 A list of key legislative requirements relevant to the Project.

Region	Legislation
National	Constitution of the Republic of South Africa (Act No. 108 of 1996)
	The National Environmental Management Act (NEMA) (Act No. 107 of 1998)
	The National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
	The National Environmental Management: Biodiversity Act (Act No. 10 of 2004), Threatened or Protected Species Regulations
	Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, GNR 320 of Government Gazette 43310 (March 2020)

	Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, GNR 1150 of Government Gazette 43855 (October 2020)
	The National Environmental Management: Waste Act, 2008 (Act 59 of 2008);
	The Environment Conservation Act (Act No. 73 of 1989)
	National Protected Areas Expansion Strategy (NPAES)
	Natural Scientific Professions Act (Act No. 27 of 2003)
	National Biodiversity Framework (NBF, 2009)
	National Forest Act (Act No. 84 of 1998)
	National Veld and Forest Fire Act (101 of 1998)
	National Water Act (NWA) (Act No. 36 of 1998)
	National Spatial Biodiversity Assessment (NSBA)
	World Heritage Convention Act (Act No. 49 of 1999)
	Municipal Systems Act (Act No. 32 of 2000)
	Alien and Invasive Species Regulations and, Alien and Invasive Species List 20142020, published under NEMBA
	South Africa's National Biodiversity Strategy and Action Plan (NBSAP)
	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA)
	Sustainable Utilisation of Agricultural Resources (Draft Legislation).
	White Paper on Biodiversity
Provincial	North West Biodiversity Sector Plan of 2015 (READ, 2015)
	North West Biodiversity Management Act (Act No. 4 of 2016)

2 Methods

2.1 Desktop Baseline

The desktop assessment was principally undertaken using a GIS to access the latest available spatial datasets to develop digital cartographs and species lists. These datasets and their date of publishing are provided below.

2.1.1 Ecologically Important Landscape Features

Existing ecologically relevant data layers were incorporated into a GIS to establish how the proposed Project might interact with any ecologically important entities. Emphasis was placed around the following spatial datasets:

- National Biodiversity Assessment 2018 (Skowno *et al*, 2019) (NBA) - The purpose of the NBA is to assess the state of South Africa's biodiversity based on best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors. The NBA deals with all three (3) components of biodiversity: genes, species, and ecosystems; and assesses biodiversity and ecosystems across terrestrial, freshwater, estuarine and marine environments. The two (2) headline indicators assessed in the NBA are:

- *Ecosystem Threat Status* – indicator of an ecosystem's wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition.

- *Ecosystem Protection Level* – indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP), Poorly Protected (PP), or Not Protected (NP), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. NP, PP or MP ecosystem types are collectively referred to as under-protected ecosystems.

- Protected areas - South Africa Protected Areas Database (SAPAD) (DEA, 2021) – The SAPAD Database contains spatial data pertinent to the conservation of South African biodiversity. It includes spatial and attribute information for both formally protected areas and areas that have less formal protection. SAPAD is updated on a continuous basis and forms the basis for the Register of Protected Areas, which is a legislative requirement under the National Environmental Management: Protected Areas Act, Act 57 of 2003.

- National Protected Areas Expansion Strategy (NPAES) (SANBI, 2016) – The NPAES provides spatial information on areas that are suitable for terrestrial ecosystem protection. These focus areas are large, intact and unfragmented and therefore, of high importance for biodiversity, climate resilience and freshwater protection.

- Conservation/Biodiversity Sector Plan:

    - The North-West Department of Economic Development, Environment, Conservation and Tourism (NWDEDECT) as custodian of the environment in the North West, is the primary implementation agent of the Biodiversity Sector Plan. The spatial component of the Biodiversity Sector Plan is based on systematic biodiversity planning undertaken by NWDEDECT. The purpose of a Biodiversity Sector Plan is to inform land-use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact biodiversity. This is done by providing a map of biodiversity priority areas, referred to as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), with accompanying land-use planning and decision-making guidelines (NWDEDECT, 2015). As part of this plan, sites were assigned to the following CBA categories based on their biodiversity characteristics, spatial configuration, and requirement for meeting targets for both biodiversity pattern and ecological processes:

        - Critical Biodiversity Area 1 (CBA1);
        - Critical Biodiversity Area 2 (CBA2);
        - Ecological Support Area 1 (ESA1); and
        - Ecological Support Area 2 (ESA2);

    - Critical Biodiversity Areas (CBAs) are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. Thus, if these areas are not maintained in a natural or near natural state then biodiversity targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity compatible land uses and resource uses (Desmet *et al.,* 2013).

    - Ecological Support Areas (ESA's) are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas and/or in delivering ecosystem services (SANBI, 2017). Critical Biodiversity Areas and Ecological Support Areas may be terrestrial or aquatic.

- Important Bird and Biodiversity Areas (IBAs) (BirdLife South Africa, 2017) – IBAs constitute a global network of over 13 500 sites, of which 112 sites are found in South Africa. IBAs are sites

of global significance for bird conservation, identified through multi-stakeholder processes using globally standardised, quantitative and scientifically agreed criteria; and

- South African Inventory of Inland Aquatic Ecosystems (SAIIAE) (Van Deventer *et al.,* 2018) – The SAIIAE was established during the NBA of 2018. It is a collection of data layers that represent the extent of river and inland wetland ecosystem types and pressures on these systems.

2.1.2 Desktop Flora Assessment

The Vegetation of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006) and SANBI (2019) was used to identify the vegetation type that would have occurred under natural or pre-anthropogenically altered conditions. Furthermore, the Plants of Southern Africa (POSA) database was accessed to compile a list of expected flora species within the PAIO (Figure 2-1). The Red List of South African Plants (Raimondo *et al.,* 2009; SANBI, 2020) was utilized to provide the most current national conservation status of flora species.

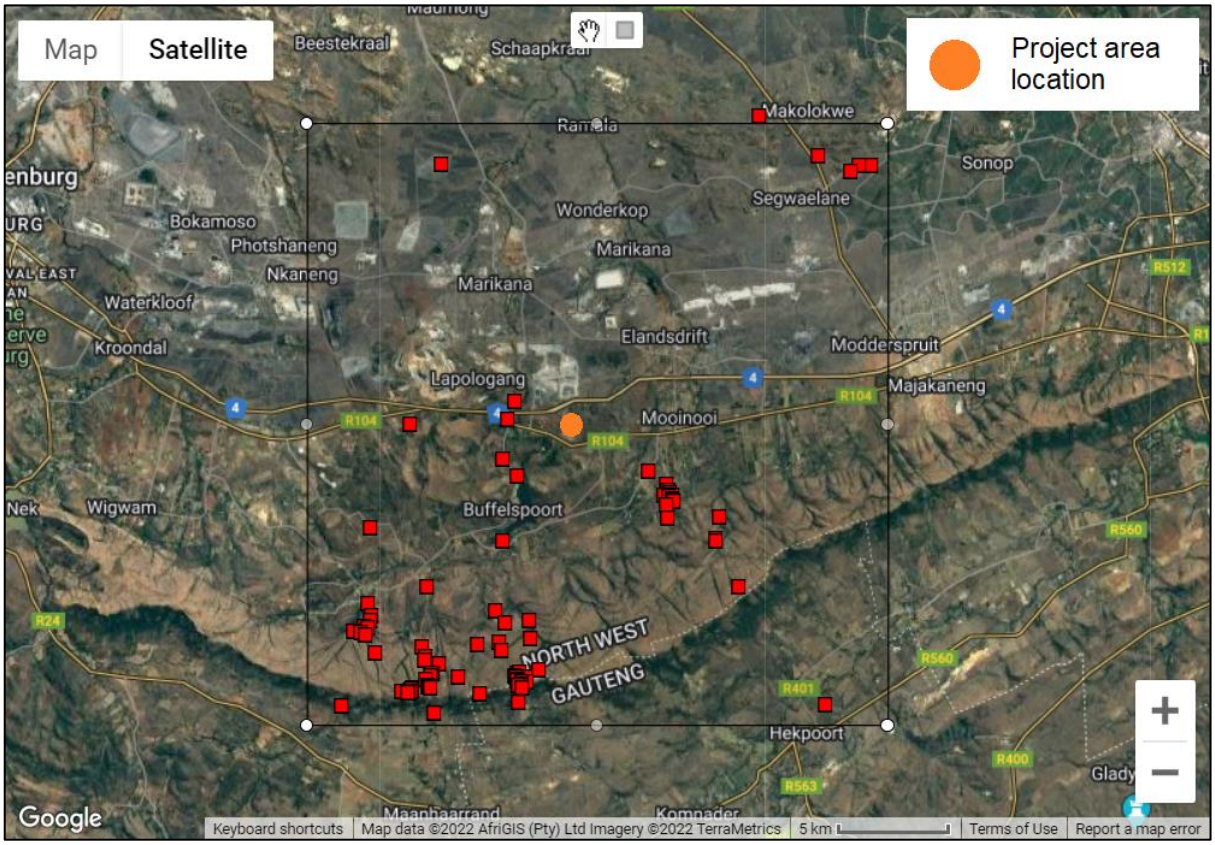

Figure 2-1 Map illustrating extent of area used to obtain the expected flora species list from the Plants of South Africa (POSA) database. Orange dot indicates approximate location of the PAOI. The red squares are cluster markers of botanical records as per POSA data.

2.1.3 Desktop Faunal Assessment

The faunal desktop assessment comprised of the following, compiling an expected:

- Amphibian list, generated from the IUCN spatial dataset (2017) and FrogMap database (Fitzpatrick Institute of African Ornithology, 2021a), using the 2527 quarter degree square;
- Reptile list, generated from the IUCN spatial dataset (2017) and ReptileMap database (Fitzpatrick Institute of African Ornithology, 2021b), using the 2527 quarter degree square; and
- Mammal list from the IUCN spatial dataset (2017).

2.2 Field Baseline assessment

A single field survey was undertaken in May 2022 (autumn), which is an early dry-season survey, to determine the presence of Species of Conservation Concern (SCC) (Effort was made to cover all the different habitat types within the limits of time and access.

2.2.1 Flora Survey

2.2.1.1 Botanical baseline

The botanical assessment will encompass an assessment of all the vegetation units and habitat types within the PAIO. The focus will be on an ecological assessment of habitat types as well as identification of any Red Data species within the known distribution of PAIO. The South African National Biodiversity Institute (SANBI) provides an electronic database system, namely the Botanical Database of Southern Africa (BODATSA), to access distribution records on southern African plants. This is a new database which replaces the old Plants of Southern Africa (POSA) database. The POSA database provided distribution data of flora at the quarter degree square (QDS) resolution. The Red List of South African Plants website (SANBI, 2017) was utilized to provide the most current account of the national status of flora. Relevant field guides and texts that will be consulted for identification purposes in the field during the surveys included the following:

- Field Guide to the Wild Flowers of the Highveld (Van Wyk & Malan, 1997);
- A field guide to Wild flowers (Pooley, 1998);
- Guide to Grasses of Southern Africa (Van Oudtshoorn, 1999);
- Orchids of South Africa (Johnson & Bytebier, 2015);
- Guide to the Aloes of South Africa (Van Wyk & Smith, 2014);
- Mesembs of the World (Smith *et al*., 1998);
- Medicinal Plants of South Africa (Van Wyk *et al*., 2013);
- Freshwater Life: A field guide to the plants and animals of southern Africa (Griffiths & Day, 2016); and
- Identification guide to southern African grasses. An identification manual with keys, descriptions and distributions (Fish *et al*., 2015).

Additional information regarding ecosystems, vegetation types, and Species of Conservation Concern (SCC) will include the following sources:

- The Vegetation of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2012); and
- Red List of South African Plants (Raimondo *et al*., 2009; SANBI, 2016).

The field work methodology will include the following survey techniques:

- Timed meanders;
    - The timed random meander method is highly efficient for conducting floristic analysis, specifically in detecting flora SCC and maximising floristic coverage. In addition, the method is time and cost effective and highly suited for compiling flora species lists and therefore gives a rapid indication of flora diversity. The timed meander search was performed based on the original technique described by Goff et al. (1982). Suitable habitat for SCC were identified according to Raimondo et al. (2009) and targeted as part of the timed meanders.
- Sensitivity analysis based on structural and species diversity; and

- Identification of floral red-data species.

2.2.1.2 Floristic Analysis

The fieldwork and sample sites were placed within targeted areas (i.e., target sites) perceived as ecologically sensitive based on the preliminary interpretation of satellite imagery (Google Corporation) and GIS analysis (which included the latest applicable biodiversity datasets) available prior to the fieldwork. The focus of the fieldwork was therefore to maximise coverage and navigate to each target site in the field, to perform a rapid vegetation and ecological assessment at each sample site. Emphasis was placed on sensitive habitats, especially those overlapping with the proposed PAOI.

Homogenous vegetation units were subjectively identified using satellite imagery and existing land cover maps. The floristic diversity and search for flora SCC were conducted through timed meanders within representative habitat units delineated during the scoping fieldwork. Emphasis was placed mostly on sensitive habitats overlapping with the PAOI.

At each sample site notes were made regarding current impacts (e.g., livestock grazing, erosion etc.), subjective recording of dominant vegetation species and any sensitive features (e.g., wetlands, outcrops etc.). In addition, opportunistic observations were made while navigating through the PAOI.

2.2.2 Fauna Survey

The faunal assessment within this report pertains to mammals, avifauna and herpetofauna (amphibians and reptiles). The faunal field survey comprised of the following techniques:

- Visual and auditory searches - This typically comprised of meandering and using binoculars to view species from a distance without them being disturbed as well as listening to species calls; and
- Active hand-searches - are used for species that shelter in or under particular micro-habitats (typically rocks, exfoliating rock outcrops, fallen trees, leaf litter, bark etc.);

Field guides and texts consulted for identification purposes included the following:

- Field Guide to Snakes and other Reptiles of Southern Africa (Branch, 1998);
- A Complete Guide to the Snakes of Southern Africa (Marais, 2004);
- Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland (Bates et al, 2014);
- A Complete Guide to the Frogs of Southern Africa (du Preez and Carruthers, 2009);
- Smithers' Mammals of Southern Africa (Apps, 2000); and
- A Field Guide to the Tracks and Signs of Southern and East African Wildlife (Stuart and Stuart, 2000).

2.3 Terrestrial Site Ecological Importance (SEI)

The different habitat types within the assessment area were delineated and identified based on observations during the field assessment as well as available satellite imagery. These habitat types were assigned Ecological Importance (EI) categories based on their ecological integrity, conservation value, the presence of species of conservation concern and their ecosystem processes.

Site Ecological Importance (SEI) is a function of the Biodiversity Importance (BI) of the receptor (e.g., SCC, the vegetation/fauna community or habitat type present on the site) and Receptor Resilience (RR) (its resilience to impacts) as follows.

BI is a function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor as follows. The criteria for the CI and FI ratings are provided in Table 2-1 and Table 2-2, respectively.

Table 2-1 Summary of Conservation Importance (CI) criteria

Conservation Importance	Fulfilling Criteria
Very High	Confirmed or highly likely occurrence of CR, EN, VU or Extremely Rare or Critically Rare species that have a global EOO of < 10 km^2. Any area of natural habitat of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent) of natural habitat of an EN ecosystem type. Globally significant populations of congregatory species (> 10% of global population).
High	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km^2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A. If listed as threatened only under Criterion A, include if there are less than 10 locations or < 10 000 mature individuals remaining. Small area (> 0.01% but < 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (> 0.1%) of natural habitat of VU ecosystem type. Presence of Rare species. Globally significant populations of congregatory species (> 1% but < 10% of global population).
Medium	Confirmed or highly likely occurrence of populations of NT species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals. Any area of natural habitat of threatened ecosystem type with status of VU. Presence of range-restricted species. > 50% of receptor contains natural habitat with potential to support SCC.
Low	No confirmed or highly likely populations of SCC. No confirmed or highly likely populations of range-restricted species. < 50% of receptor contains natural habitat with limited potential to support SCC.
Very Low	No confirmed and highly unlikely populations of SCC. No confirmed and highly unlikely populations of range-restricted species. No natural habitat remaining.

Table 2-2 Summary of Functional Integrity (FI) criteria

Functional Integrity	Fulfilling Criteria
Very High	Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types. High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches. No or minimal current negative ecological impacts with no signs of major past disturbance.
High	Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types. Good habitat connectivity with potentially functional ecological corridors and a regularly used road network between intact habitat patches. Only minor current negative ecological impacts with no signs of major past disturbance and good rehabilitation potential.
Medium	Medium (> 5 ha but < 20 ha) semi-intact area for any conservation status of ecosystem type or > 20 ha for VU ecosystem types. Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches. Mostly minor current negative ecological impacts with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.
Low	Small (> 1 ha but < 5 ha) area. Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat and a very busy used road network surrounds the area. Low rehabilitation potential. Several minor and major current negative ecological impacts.
Very Low	Very small (< 1 ha) area. No habitat connectivity except for flying species or flora with wind-dispersed seeds. Several major current negative ecological impacts.

BI can be derived from a simple matrix of CI and FI as provided in Table 2-3

Table 2-3 Matrix used to derive Biodiversity Importance (BI) from Functional Integrity (FI) and Conservation Importance (CI)

Biodiversity Importance (BI)		Conservation Importance (CI)				
		Very high	High	Medium	Low	Very low
Functional Integrity (FI)	Very high	Very high	Very high	High	Medium	Low
	High	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	Low	Medium	Medium	Low	Low	Very low
	Very low	Medium	Low	Very low	Very low	Very low

The fulfilling criteria to evaluate Resource Resilience (RR) are based on the estimated recovery time required to restore an appreciable portion of functionality to the receptor as summarised in Table 2-4.

Table 2-4 Summary of Resource Resilience (RR) criteria

Resilience	Fulfilling Criteria
Very High	Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a very high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a very high likelihood of returning to a site once the disturbance or impact has been removed.
High	Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed.
Medium	Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.
Low	Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a low likelihood of returning to a site once the disturbance or impact has been removed.
Very Low	Habitat that is unable to recover from major impacts, or species that are unlikely to remain at a site even when a disturbance or impact is occurring, or species that are unlikely to return to a site once the disturbance or impact has been removed.

Subsequent to the determination of the BI and RR, the SEI can be ascertained using the matrix as provided in Table 2-5.

Table 2-5 Matrix used to derive Site Ecological Importance (SEI) from Receptor Resilience (RR) and Biodiversity Importance (BI)

Site Ecological Importance (SEI)		Biodiversity Importance (BI)				
		Very high	High	Medium	Low	Very low
Receptor Resilience (RR)	Very Low	Very high	Very high	High	Medium	Low
	Low	Very high	Very high	High	Medium	Very low
	Medium	Very high	High	Medium	Low	Very low
	High	High	Medium	Low	Very low	Very low
	Very High	Medium	Low	Very low	Very low	Very low

Interpretation of the SEI in the context of the proposed development activities is provided in Table 2-6.

Table 2-6 Guidelines for interpreting Site Ecological Importance (SEI) in the context of the proposed development activities

Site Ecological Importance (SEI)	Interpretation in relation to proposed development activities
Very High	Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e., last remaining populations of species, last remaining good condition patches of ecosystems/unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
High	Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted, limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.
Medium	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Low	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Very Low	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

The SEI evaluated for each taxon can be combined into a single multi-taxon evaluation of SEI for the assessment area. Either a combination of the maximum SEI for each receptor should be applied, or the SEI may be evaluated only once per receptor but for all necessary taxa simultaneously. For the latter, justification of the SEI for each receptor is based on the criteria that conforms to the highest CI and FI, and the lowest RR across all taxa.

3 Results & Discussion

3.1 Desktop Baseline

3.1.1 Ecologically Important Landscape Features

The GIS analysis pertaining to the relevance of the proposed Project to ecologically important landscape features is summarised in Table 3-1.

Table 3-1 Summary of relevance of the PAIO to ecologically important landscape features.

Desktop Information Considered	Relevant/Irrelevant	Section
Ecosystem Threat Status	Relevant – Overlaps mainly with an Endangered ecosystem and a small portion Least Concern ecosystem.	3.1.1.1
Ecosystem Protection Level	Relevant – Overlaps with a Poorly Protected Ecosystem.	3.1.1.2
Protected Areas	Relevant – The PAOIoverlaps with the Magaliesberg Biosphere Reserve (the development footprint falls within the buffer area and the grid corridor extends into the transition areas)	3.1.1.4
National Protected Areas Expansion Strategy	Relevant – The PAOI overlaps with a NPAES Priority Focus Area.	3.1.1.5
Critical Biodiversity Area	Relevant – The PAOIoverlaps with a CBA2, an ESA1 and an ESA2.	3.1.1.3
Important Bird and Biodiversity Areas	Relevant – Overlaps with the Magaliesberg IBA.	3.1.1.6
South African Inventory of Inland Aquatic Ecosystems	Relevant – The PAOI's 500 m regulated zone overlaps with a Critically Endangered (CR) river.	3.1.1.7
National Freshwater Priority Area	Relevant – The PAOI 500 m regulated zone overlaps with five unclassified NFEPA wetlands.	3.1.1.8
Strategic Water Source Areas	Irrelevant – The PAOIis 130 km from the closest SWSA.	-
REDZ	Irrelevant – Does not overlap with any Renewable Energy Development Zones.	
Powerline Corridor	Irrelevant – Lies 2.6 km North from the Northern Corridor of the Strategic Transmission Corridors	

3.1.1.1 Ecosystem Threat Status

The Ecosystem Threat Status is an indicator of an ecosystem's wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition. According to the spatial dataset the proposed PAOI overlaps mainly with an EN ecosystem, and marginally with a LC ecosystem (Figure 3-1).

Figure 3-1 Map illustrating the ecosystem threat status associated with the PAOI.

3.1.1.2 Ecosystem Protection Level

This is an indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP), Poorly Protected (PP), or Not Protected (NP), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. NP, PP or MP ecosystem types are collectively referred to as under-protected ecosystems. The proposed PAOI overlaps with a PP ecosystem (Figure 3-2).

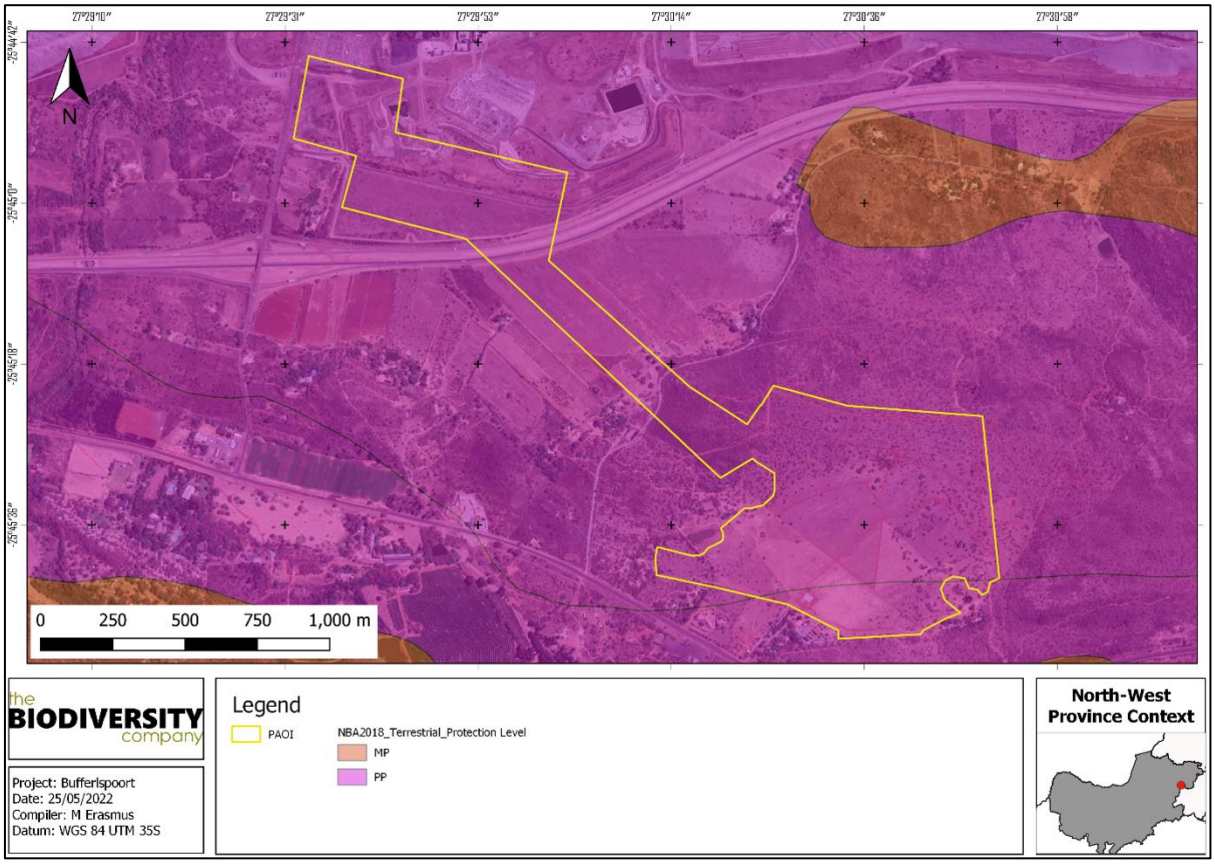

Figure 3-2 Map illustrating the ecosystem protection level associated with the PAOI.

3.1.1.3 Critical Biodiversity Areas and Ecological Support Areas

The conservation of CBAs is crucial, in that if these areas are not maintained in a natural or near-natural state, biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity compatible land uses and resource uses (SANBI-BGIS, 2017).

The purpose of the North-West Biodiversity Sector Plan (NWBSP) (2015) is to inform land-use planning and development on a provincial scale and to aid in natural resource management. One of the outputs is a map of Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). These are classified into different categories, namely CBA1 areas, CBA2 areas, ESA1 areas and ESA2 areas based on biodiversity characteristics, spatial configuration, and requirements for meeting targets for both biodiversity patterns and ecological processes.

Figure 3-3 shows the PAOI superimposed on the Terrestrial CBA maps. The PAOI overlaps with a CBA2, an ESA1 and an ESA2.

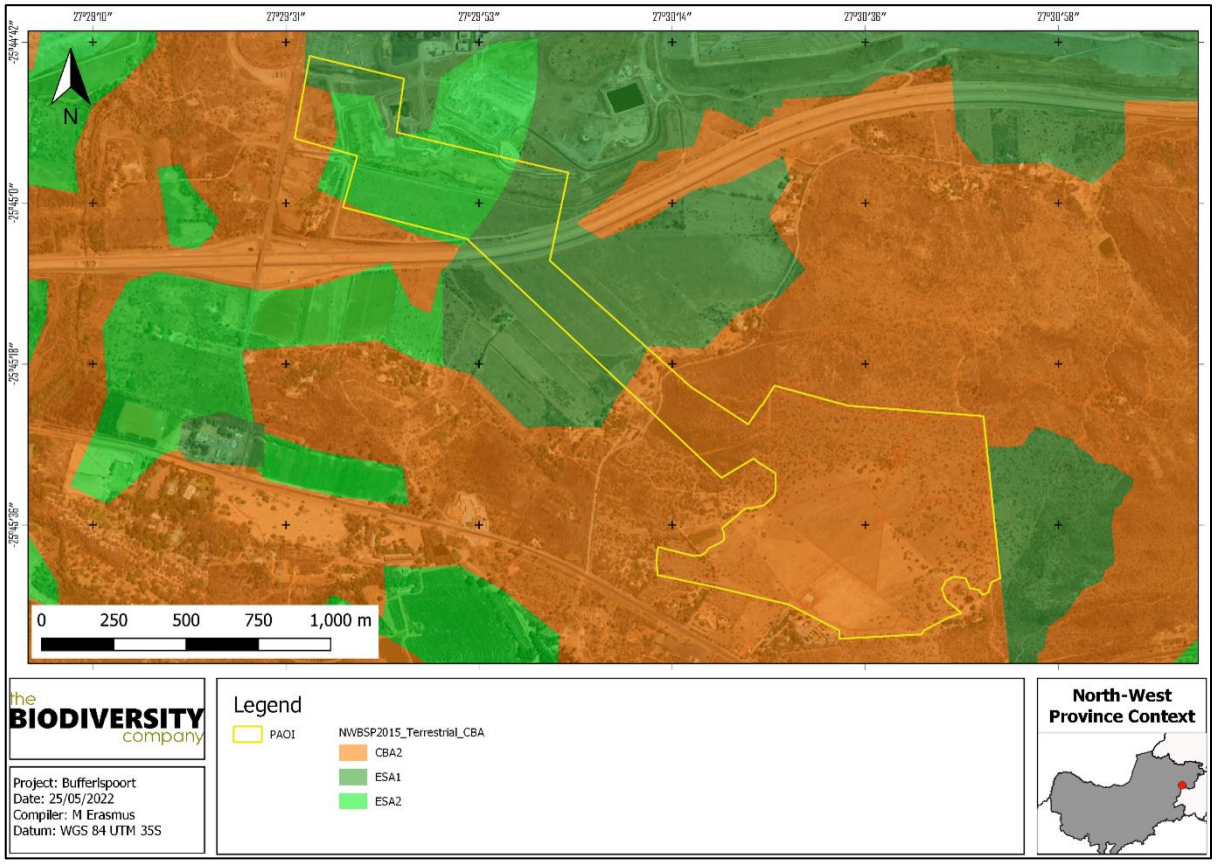

Figure 3-3 Map illustrating the locations of CBAs in the PAOI.

3.1.1.4 Protected areas

According to the protected area spatial datasets from SAPAD (2021) and SACAD (2021), the PAOI overlaps with the Magaliesberg Biosphere Reserve (Figure 3-4), with areas designated as a Buffer Zone and Transition Area.

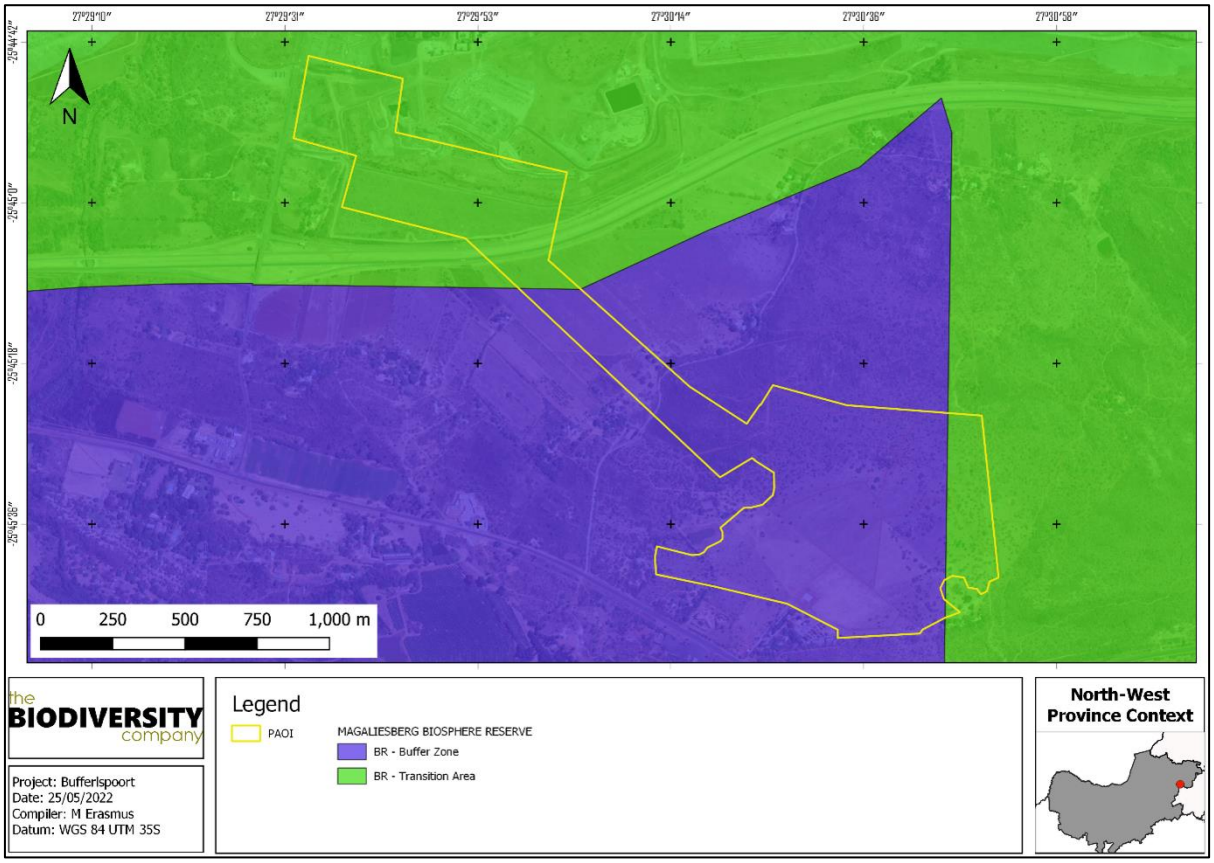

Figure 3-4 The PAOI relation to the protected areas.

3.1.1.5 National Protected Area Expansion Strategy

National Protected Area Expansion Strategy 2016 (NPAES) areas were identified through a systematic biodiversity planning process. They present the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES and were designed with a strong emphasis on climate change resilience and requirements for protecting freshwater ecosystems. These areas should not be seen as future boundaries of protected areas, as in many cases only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES. They are also not a replacement for fine scale planning which may identify a range of different priority sites based on local requirements, constraints and opportunities (NPAES, 2016).

The PAOI overlaps with a NPAES Priority Focus Area (Figure 3-5).

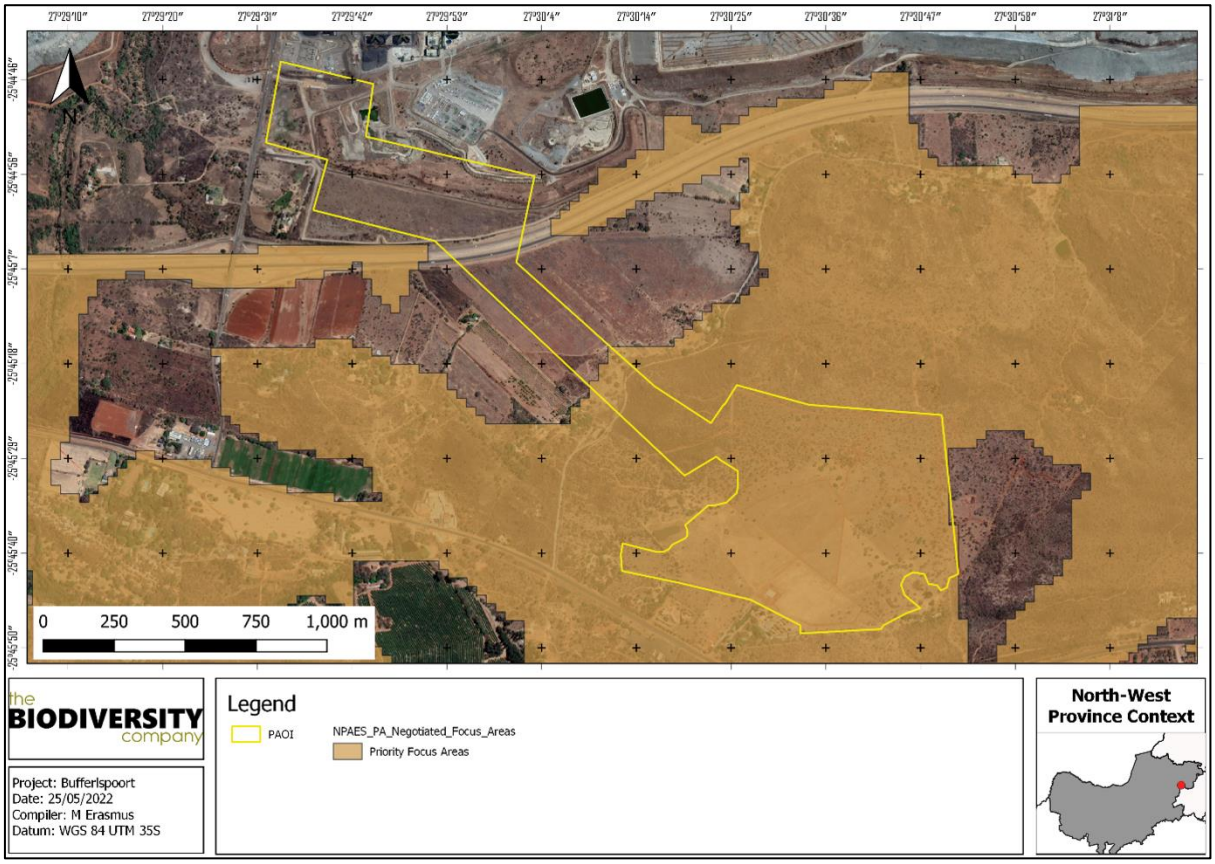

Figure 3-5 The PAOI in relation to the National Protected Area Expansion Strategy

3.1.1.6 Important Bird and Biodiversity Area

Important Bird & Biodiversity Areas (IBAs) are sites of international significance for the conservation of the world's birds and other conservation significant species as identified by BirdLife International. These sites are also all Key Biodiversity Areas; sites that contribute significantly to the global persistence of biodiversity (Birdlife South Africa, 2017).

According to Birdlife South Africa (2017), the selection of IBAs is achieved through the application of quantitative ornithological criteria, grounded in up-to-date knowledge of the sizes and trends of bird populations. The criteria ensure that the sites selected as IBAs have true significance for the international conservation of bird populations and provide a common currency that all IBAs adhere to, thus creating consistency among, and enabling comparability between, sites at national, continental and global levels. Figure 3-6 shows that the PAOI overlaps with the Magaliesberg IBA.

The Magaliesberg IBA was previously known as the Magaliesberg and Witwatersberg IBA and consists mainly of the Magaliesberg range which extends from the North-West of Rustenburg in the West to the N1 in the East near Pretoria (Birdlife South Africa, 2015). Several large rivers have their headwaters in these mountains, such as the Crocodile, Sterkstroom, Magalies and Skeerpoort rivers (Birdlife South Africa, 2015). Three (3) major impoundments have been built along the Magaliesberg, namely the Hartbeespoort Dam in the East, Buffelspoort Dam in the centre and Olifantsnek Dam about 7 km south of Rustenburg (Birdlife South Africa, 2015).

IBA trigger species in the Magaliesberg IBA include two (2) globally threatened species, namely Cape Vulture (*Gyps coprotheres*) and Secretarybird (*Sagittarius serpentarius*), of which the former is considered to be the most important (Birdlife South Africa, 2015). Regionally threatened species include the Lanner Falcon (*Falco biarmicus*), Half-collared Kingfisher (*Alcedo semitorquata*), African Grass Owl (*Tyto capensis*), African Finfoot (*Podica senegalensis*) and Verreaux's Eagle (*Aquila verreauxii*) (Birdlife South Africa, 2015). Biome-restricted species include the White-bellied Sunbird (*Cinnyris talatala*),

Kurrichane Thrush (*Turdus libonyanus*), White-throated Robin-chat (*Cossypha humeralis*), Kalahari Scrub Robin (*Erythropygia paena*) and Barred Wren-Warbler (*Calamonastes fasciolatus*) (Birdlife South Africa, 2015).

Figure 3-6 The PAOI in relation to the Magaliesberg IBA

3.1.1.7 Hydrological Setting

The South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was released with the NBA 2018. Ecosystem threat status (ETS) of river and wetland ecosystem types are based on the extent to which each river ecosystem type had been altered from its natural condition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Least Threatened (LT), with CR, EN and VU ecosystem types collectively referred to as 'threatened' (Van Deventer *et al.,* 2019; Skowno *et al.,* 2019). The 500 m regulated area around the grid corridor overlaps with a CR river, the Sterkstroom River (Figure 3-7).

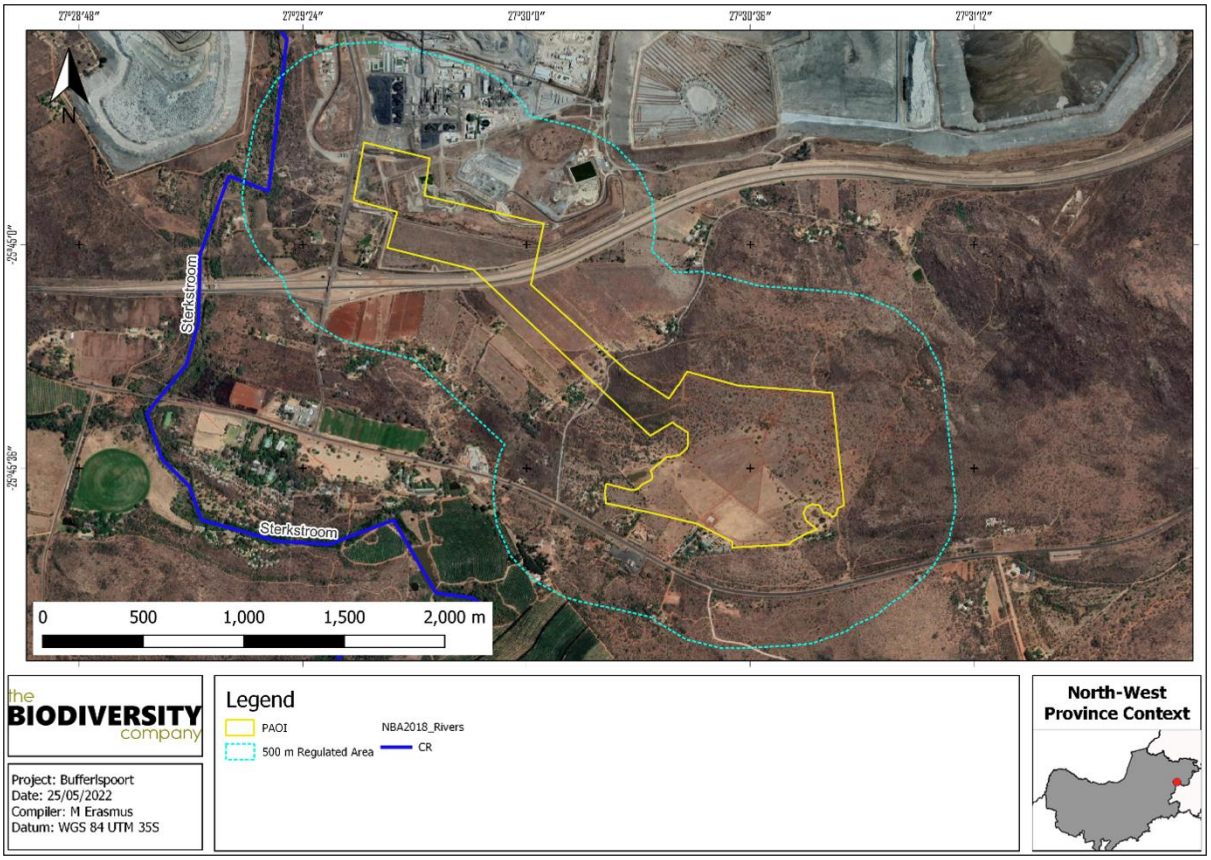

Figure 3-7 Map illustrating ecosystem threat status of rivers and wetland ecosystems in the PAOI.

3.1.1.8 National Freshwater Ecosystem Priority Area Status

In an attempt to better conserve aquatic ecosystems, South Africa has categorised its river systems according to set ecological criteria (i.e., ecosystem representation, water yield, connectivity, unique features, and threatened taxa) to identify Freshwater Ecosystem Priority Areas (FEPAs) (Driver *et al.,* 2011). The FEPAs are intended to be conservation support tools and envisioned to guide the effective implementation of measures to achieve the National Environment Management Biodiversity Act's (NEM:BA) biodiversity goals (Nel *et al.,* 2011).

Figure 3-8 shows that the PAOI's500 m regulated area overlaps with five (5) unclassified NFEPA wetlands.

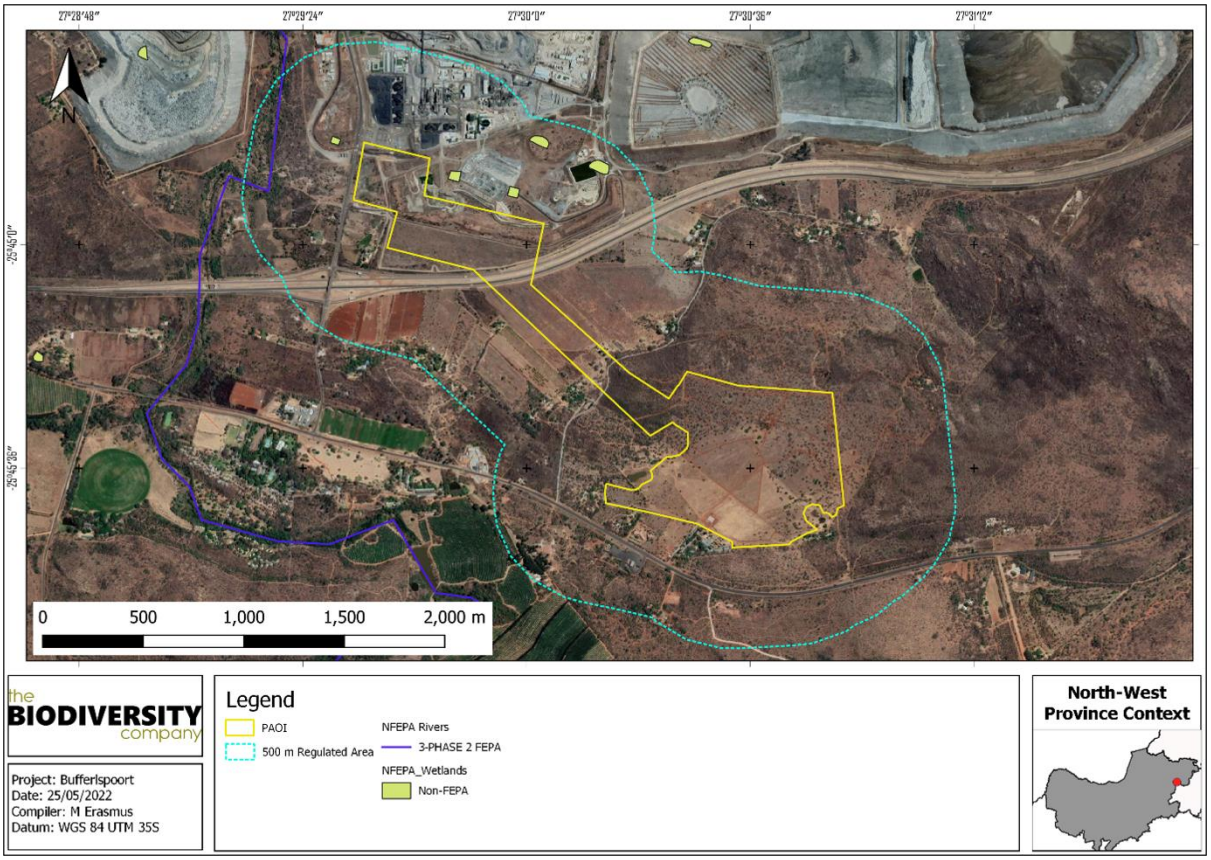

Figure 3-8 The PAOI in relation to the National Freshwater Ecosystem Priority Areas

3.1.2 Flora Baseline

This section is divided into a description of the vegetation type expected to occur under natural conditions and the expected flora species.

3.1.2.1 Vegetation Type

The PAOI is situated in the Savanna Biome. The savanna vegetation of South Africa represents the southernmost extension of the most widespread biome in Africa (Mucina & Rutherford, 2006). Major macroclimatic traits that characterise the Savanna Biome include a seasonal precipitation and a sub-tropical thermal regime with no or usually low incidence of frost (Mucina & Rutherford, 2006).

The Savanna Biome is the largest biome in South Africa, extending throughout the east and north-eastern areas of the country. Savannas are characterised by a dominant grass layer, over-topped by a discontinuous, but distinct woody plant layer (Mucina & Rutherford, 2006). At a structural level, Africa's savannas can be broadly categorised as either fine-leaved (microphyllous) savannas or broad-leaved savannas. Fine-leaved savannas typically occur on nutrient rich soils and are dominated by microphyllous woody plants of the Mimosaceae family (Common genera include *Vachellia* and *Albizia*) and a generally dense herbaceous layer (Scholes & Walker, 1993).

On a fine-scale vegetation type, the PAOI overlap with the Marikana Thornveld and Moot Plains Bushveld vegetation types (Figure 3-9).

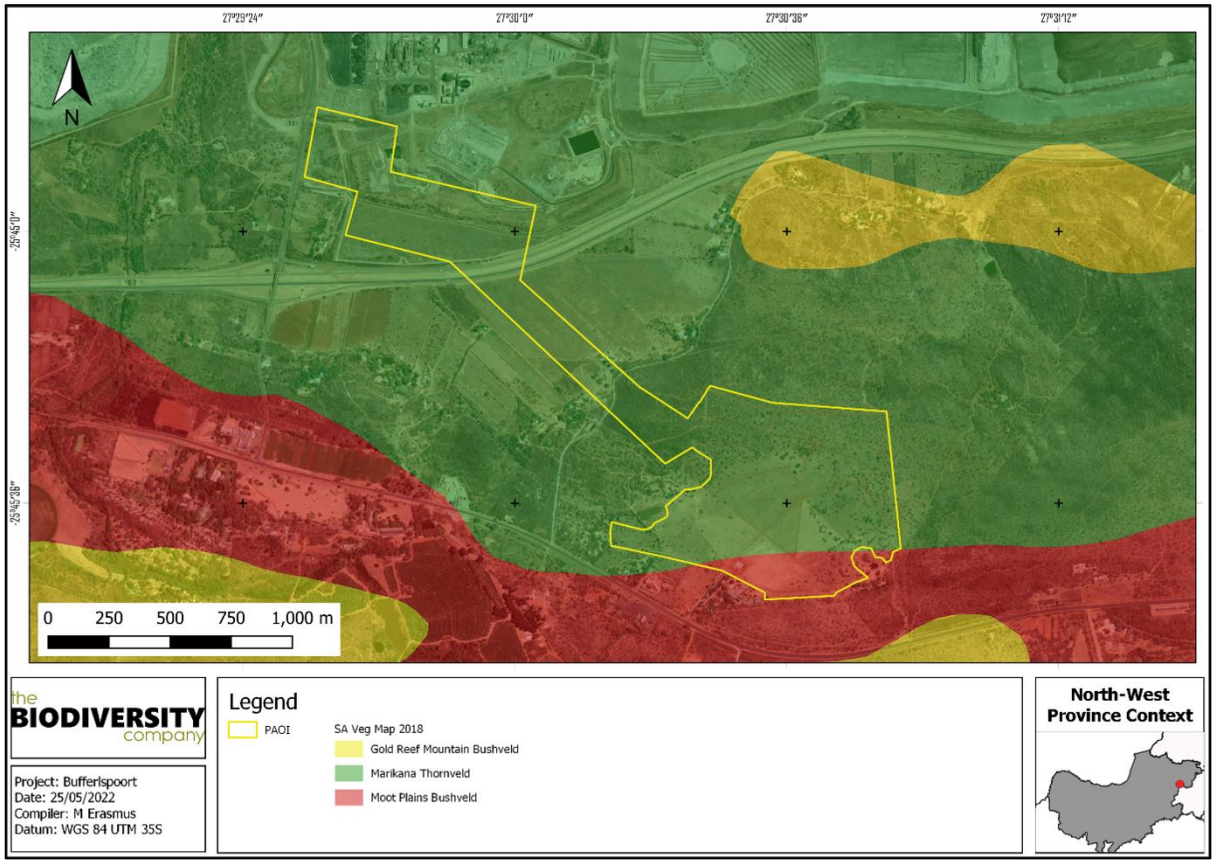

Figure 3-9 Map illustrating the vegetation type associated with the PAOI.

3.1.2.1.1 Marikana Thornveld

Marikana Thornveld extends on the broad plains from Rustenburg in the West, through Marikana and Brits, and towards Pretoria in the East (Mucina & Rutherford, 2006). It is characterised by open *Vachellia karroo* woodland, which occurs in valleys and on undulating plains and hills (Mucina & Rutherford, 2006). Fire-protected habitats, such as drainage lines, rocky outcrops and termitaria are typically dominated by denser, shrub-dominated vegetation (Mucina & Rutherford, 2006).

Important Plant Taxa in the Marikana Thornveld

Based on Mucina and Rutherford's (2006) vegetation classification, important plant taxa are those species that have a high abundance, a frequent occurrence (not being particularly abundant) or are prominent in the landscape within a particular vegetation type. They note the following species are important taxa in the Marikana Thornveld vegetation type:

Tall Tree: *Senegalia burkei*.

Small Trees: *Senegalia caffra*, *Vachellia gerrardii*, *Vachellia karroo*, *Combretum molle*, *Searsia lancea*, *Ziziphus mucronata*, *Vachellia nilotica, Vachellia tortilis* subsp. *heteracantha*, *Celtis africana*, *Dombeya rotundifolia*, *Pappea capensis*, *Peltophorum africanum*, *Terminalia sericea*.

Tall Shrubs: *Euclea crispa* subsp. *crispa*, *Olea europaea* subsp. *africana*, *Searsia pyroides* var. *pyroides*, *Diospyros lycioides* subsp. *guerkei*, *Ehretia rigida* subsp. *rigida*, *Euclea undulata*, *Grewia flava*, *Pavetta gardeniifolia*.

Low Shrubs: *Asparagus cooperi*, *Rhynchosia nitens*, *Indigofera zeyheri*, *Justicia flava*.

Woody Climbers: *Clematis brachiata*, *Helinus integrifolius*.

Herbaceous Climbers: *Pentarrhinum insipidum*, *Cyphostemma cirrhosum*.

Graminoids: *Elionurus muticus*, *Eragrostis lehmanniana*, *Setaria sphacelata*, *Themeda triandra*, *Aristida scabrivalvis* subsp. *scabrivalvis*, *Fingerhuthia africana*, *Heteropogon contortus*, *Hyperthelia dissoluta*, *Melinis nerviglumis*, *Pogonarthria squarrosa*.

Herbs: *Hermannia depressa*, *Ipomoea obscura*, *Barleria macrostegia*, *Dianthus mooiensis* subsp. *mooiensis*, *Ipomoea oblongata*, *Vernonia oligocephala*.

Geophytic Herbs: *Ledebouria revoluta*, *Ornithogalum tenuifolium*, *Sansevieria aethiopica*.

Conservation Status

According to Mucina and Rutherford (2006), this vegetation type is classified as Endangered, with its national conservation target being 19%. Over 48% has already been transformed by urban expansion and cultivation, and alien invasive plants occur in high densities, especially along drainage lines (Mucina & Rutherford, 2006). Erosion is very low to moderate (Mucina & Rutherford, 2006). Less than 1% is conserved in the Magaliesberg Nature Area, De Onderstepoort Nature Reserve and other reserves. Erosion is very low to moderate (Mucina & Rutherford, 2006).

3.1.2.1.2 Moot Plains Bushveld

The main belt of the Moot Plains Bushveld extends from the Selons River Valley south of the Magaliesberg, through Maanhaarrand and the valley bottom of the Magalies River, east of the Hartebeestpoort Dam between the Magaliesberg and Daspoort mountain ranges and to Pretoria (Mucina & Rutherford, 2006). It is characterised by low-lying savanna dominated by *Vachellia* species. occurring on the bottomlands and plains, or woodlands on the lower hillsides vary in height and density (Mucina & Rutherford, 2006). Grasses dominate the herbaceous layer (Mucina & Rutherford, 2006).

Important Plant Taxa in the Moot Plains Bushveld

Mucina and Rutherford (2006) noted the following species as important taxa in the Moot Plains Bushveld:

Small trees: *Vachellia nilotica*, *Vachellia tortillis* subsp. *heteracantha*, *Searsia lancea*.

Tall shrubs: *Buddleja saligna*, *Euclea undulata*, *Olea europaea* subsp. *africana*, *Grewia occidentalis*, *Gymnosporia polyacantha*, *Mystroxylon aethiopicum* subsp. *burkeanum*.

Low shrubs: *Aptosimum elongatum*, *Felicia fascicularis*, *Lantana rugosa*, *Teucrium trifidum*.

Succulent shrub: *Kalanchoe paniculata*.

Woody climber: *Jasminum breviflorum*.

Herbaceous climber: *Lotononis bainesii*.

Graminoids: *Heteropogon contortus*, *Setaria sphacelata*, *Themeda triandra*, *Aristida congesta*, *Chloris virgata*, *Cynodon dactylon*, *Sporobolus nitens*, *Tragus racemosus*.

Herbs: *Achyropsis avicularis*, *Corchorus asplenifolius*, *Evolvulus alsinoides*, *Helichrysum nudifolium*, *Helichrysum undulatum*, *Hermannia depressa*, *Osteospermum muricatum*, *Phyllanthus maderaspatensis*.

Conservation Status

According to Mucina and Rutherford (2006), this vegetation type is classified as Vulnerable, with its national conservation target being 19%. About 28% has been transformed by cultivation as well as urban and built-up areas (Mucina & Rutherford, 2006). Erosion is mainly very low to low, but also moderate in some areas (Mucina & Rutherford, 2006). About 13% is statutorily conserved, mainly in the Magaliesberg Nature Area (Mucina & Rutherford, 2006). Outside protected areas there are very scattered occurrences to sometimes dense patches of this vegetation type in places of various alien plants such as *Cereus*

jamacaru, *Eucalyptus* species, *Jacaranda mimosifolia*, *Lantana camara*, *Melia azedarach* and *Schinus* species (Mucina & Rutherford, 2006).

3.1.2.2 Expected Flora Species

The Plants of Southern Africa (POSA) database indicates that 508 species of indigenous plants are expected to occur within the PAOI. Three (3) flora Species of Conservation Concern (SCC), based on their conservation status, could be expected to occur within the PAOI and are provided in Table 3-2 below.

Table 3-2 Threatened flora species that may occur within the PAOI

Family	Taxon	Author	IUCN	Ecology
Crassulaceae	*Adromischus umbraticola* subsp. *umbraticola*	C.A.Sm.	NT	Indigenous; Endemic
Aizoaceae	*Delosperma leendertziae*	N.E.Br.	NT	Indigenous; Endemic
Apocynaceae	*Stenostelma umbelluliferum*	(Schltr.) Bester & Nicholas	NT	Indigenous; Endemic

3.1.3 Faunal baseline

Herpetofauna (amphibians and reptiles) and mammal species fall under this section. A separate avifaunal report was compiled for this Project.

3.1.3.1 Amphibians

Based on the IUCN Red List Spatial Data and FrogMap, 22 amphibian species are expected to occur within the area. No amphibian SCCs are expected to occur within the PAOI.

3.1.3.2 Reptiles

Based on the IUCN Red List Spatial Data and the ReptileMAP database, 66 reptile species are expected to occur within the area. One (1) species is regarded as threatened (Table 3-3).

Table 3-3 Threatened reptile species that are expected to occur within the PAOI

Species	Common Name	Conservation Status		Likelihood of Occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
Kinixys lobatsiana	Lobatse Hinged Tortoise	VU	VU	Moderate

Kinixys lobatsiana (Lobatse Hinged Tortoise) occurs in South Africa and Botswana, where it prefers rocky hillsides in habitats of mixed *Vachellia* and *Combretum* woodland, tropical bushveld as well as thornveld where vegetation ranges from dense, short shrubland to open tree savanna (IUCN, 2017). Main threats are habitat destruction and degradation due to urbanization, mining, agriculture and alien invasive plants (IUCN, 2017). The presence of savanna habitat within the PAOI contributed to a **moderate likelihood** of occurrence for this species.

3.1.3.3 Mammals

The International Union for Conservation of Nature (IUCN) Red List Spatial Data lists 86 mammal species that could be expected to occur within the PAOI. This list excludes large mammal species that are normally restricted to protected areas. Thirteen (13) of these expected species are regarded as threatened (Table 3-4). Of these thirteen (13) SCCs, nine (9) have a **low likelihood** of occurrence based on the lack of suitable habitat on the PAOI.

Table 3-4 Threatened mammal species that are expected to occur within the PAOI

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
Aonyx capensis	Cape Clawless Otter	NT	NT	Low
Atelerix frontalis	South African Hedgehog	NT	LC	Moderate
Cloeotis percivali	Short-eared Trident Bat	EN	LC	Low
Crocidura mariquensis	Swamp Musk Shrew	NT	LC	Low
Eidolon helvum	African Straw-colored Fruit Bat	LC	NT	Low
Felis nigripes	Black-footed Cat	VU	VU	Moderate
Hydrictis maculicollis	Spotted-necked Otter	VU	NT	Low
Mystromys albicaudatus	White-tailed Rat	VU	EN	Low
Ourebia ourebi	Oribi	EN	LC	Low
Panthera pardus	Leopard	VU	VU	High
Parahyaena brunnea	Brown Hyaena	NT	NT	Moderate
Pelea capreolus	Grey Rhebok	NT	LC	Low
Redunca fulvorufula	Mountain Reedbuck	EN	LC	Low

Atelerix frontalis (South African Hedgehog) has a tolerance to a degree for habitat modification and occurs in a wide variety of semi-arid and sub-temperate habitats (IUCN, 2017). Based on the Red List of Mammals of South Africa, Lesotho and Swaziland (2016), South African Hedgehog populations are decreasing due to the threats of electrocution, veld fires, road collisions, predation from domestic pets and illegal harvesting. This species' ability to adapt to some human disturbances, combined with the presence of semi-natural to natural habitat within the PAOI contributed to a **moderate likelihood** of occurrence for this species.

Felis nigripes (Black-footed cat) is endemic to the arid regions of southern Africa (IUCN, 2017). This species is naturally rare, has cryptic colouring, is small in size and is nocturnal. These factors have contributed to a lack of information on this species (IUCN, 2017). The highest densities of this species have been recorded in the more arid Karoo region of South Africa (IUCN, 2017). The habitat condition and integrety in the PAOI can be considered to be somewhat suitable for the species and the likelihood of occurrence is therefore rated as **moderate**.

Panthera pardus (Leopard) has a wide habitat tolerance and are quite adaptable to human encroachment and crop-farming areas (Apps, 2012). It is mostly nocturnal, although it can be seen during the day, especially in protected areas (Apps, 2012). The Leopard's ability to adapt to anthropogenic activities and the presence of a conservation area overlapping with the PAOI contributed to a **high likelihood** of occurrence in the PAOI for this species.

Parahyaena brunnea (Brown Hyaena) is endemic to southern Africa (IUCN, 2017). This species occurs in dry areas, generally with annual rainfall less than 100 mm, particularly along the coast, semi-desert, open scrub and open woodland savanna (IUCN, 2017). Given its known ability to persist outside of formally protected areas the likelihood of occurrence of this species in the PAOI is **moderate**.

3.2 Field Assessment

The following sections provide the results from a single field survey for the proposed development that was undertaken from the 17th of May 2022.

3.2.1 Flora Assessment

This section is divided into two sections:

- Indigenous flora; and
- Invasive Alien Plants (IAPs).

3.2.1.1 Indigenous flora

The vegetation assessment was conducted throughout the extent of the PAOI. The tree, shrub and herbaceous plant species were recorded in the PAOI during the field assessment can be seen in Table 3-5. Some of the plant species recorded can be seen in Figure 3-10.

Table 3-5 Trees, shrub and herbaceous plant species recorded on the PAOI.

Family	*Scientific Name*	Threat Status (SANBI, 2021)	SA Endemic	Alien Category
Agavaceae	*Chlorophytum cooperi*	LC	Not Endemic	
Amaryllidaceae	*Haemanthus humilis*	LC	Not Endemic	
Anacardiaceae	*Searsia lancea*	LC	Not Endemic	
Anacardiaceae	*Ozoroa paniculosa*	LC	Not Endemic	
Anacardiaceae	*Searsia zeyheri*	LC	Endemic	
Anacardiaceae	*Sclerocarya birrea subsp. caffra*	LC-Protected Tree	Not Endemic	
Apocynaceae	*Gomphocarpus fruticosus*	LC	Not Endemic	
Araliaceae	*Cussonia spicata*	LC	Not Endemic	
Asparagaceae	*Asparagus cooperi*	LC	Not Endemic	
Asphodelaceae	*Aloe davyana*	LC	Not Endemic	
Asteraceae	*Nidorella anomala*	LC	Not Endemic	
Asteraceae	*Kleinia longiflora*	LC	Not Endemic	
Asteraceae	*Geigeria burkei*	LC	Not Endemic	
Asteraceae	*Felicia muricata*	LC	Not Endemic	
Asteraceae	*Dicoma anomala*	LC	Not Endemic	
Asteraceae	*Helichrysum rugulosum*	LC	Not Endemic	
Boraginaceae	*Ehretia rigida*	LC	Endemic	
Cannabaceae	*Celtis africana*	LC	Not Endemic	
Celastraceae	*Maytenus albata*	LC	Endemic	
Combretaceae	*Combretum hereroense*	LC	Not Endemic	
Combretaceae	*Combretum molle*	LC	Not Endemic	
Combretaceae	*Combretum zeyheri*	LC	Not Endemic	
Ebenaceae	*Diospyros lycioides subsp. lycioides*	LC	Not Endemic	
Ebenaceae	*Euclea crispa subsp. crispa*	LC	Not Endemic	
Euphorbiaceae	*Euphorbia cooperi*	LC	Not Endemic	
Euphorbiaceae	*Croton gratissimus*	LC	Not Endemic	

Fabaceae	*Dichrostachys cinerea*	LC	Not Endemic	
Fabaceae	*Senegalia caffra*	LC	Not Endemic	
Fabaceae	*Senegalia mellifera*	LC	Not Endemic	
Fabaceae	*Vachellia karoo*	LC	Not Endemic	
Fabaceae	*Vachellia nilotica*	LC	Not Endemic	
Fabaceae	*Vachellia robusta*	LC	Not Endemic	
Fabaceae	*Vachellia tortilis*	LC	Not Endemic	
Fabaceae	*Peltophorum africanum*	LC	Not Endemic	
Iridaceae	*Gladiolus dalenii*	LC	Not Endemic	
Lamiaceae	*Vitex zeyheri*	LC	Not Endemic	
Malvaceae	*Dombeya rotundifolia var. rotundifolia*	LC	Not Endemic	
Malvaceae	*Hermannia depressa*	LC	Not Endemic	
Moraceae	*Ficus ingens*	LC	Not Endemic	
Oxalidaceae	*Oxalis depressa*	LC	Not Endemic	
Poaceae	*Aristida congesta subsp. barbicollis*	LC	Not Endemic	
Poaceae	*Aristida stipitata subsp. graciliflora*	LC	Not Endemic	
Poaceae	*Bothriochloa insculpta*	LC	Not Endemic	
Poaceae	*Brachiaria xantholeuca*	LC	Not Endemic	
Poaceae	*Cymbopogon caesius*	LC	Not Endemic	
Poaceae	*Cynodon dactylon*	LC	Not Endemic	
Poaceae	*Eragrostis chloromelas*	LC	Not Endemic	
Poaceae	*Eragrostis curvula*	LC	Not Endemic	
Poaceae	*Eragrostis racemosa*	LC	Not Endemic	
Poaceae	*Eragrostis superba*	LC	Not Endemic	
Poaceae	*Heteropogon contortus*	LC	Not Endemic	
Poaceae	*Hyparrhenia hirta*	LC	Not Endemic	
Poaceae	*Melinis repens*	LC	Not Endemic	
Poaceae	*Panicum maximum*	LC	Not Endemic	
Poaceae	*Sporobolus africanus*	LC	Not Endemic	
Poaceae	*Themeda triandra*	LC	Not Endemic	
Poaceae	*Aristida bipartita*	LC	Not Endemic	
Poaceae	*Digitaria eriantha*	LC	Not Endemic	
Poaceae	*Pogonarthria squarrosa*	LC	Not Endemic	
Poaceae	*Cenchrus ciliaris*	LC	Not Endemic	
Poaceae	*Eragrostis rigidior*	LC	Not Endemic	
Poaceae	*Sorghum versicolor*	LC	Not Endemic	
Pteridaceae	*Pellaea calomelanos var. calomelanos*	LC	Not Endemic	
Rhamnaceae	*Berchemia zeyheri*	LC-Protected Tree	Not Endemic	
Rhamnaceae	*Ziziphus mucronata subsp. mucronata*	LC	Not Endemic	

Ruscaceae	*Sansevieria aethiopica*	LC	Not Endemic	
Sapindaceae	*Pappea capensis*	LC	Not Endemic	
Sapindaceae	*Dodonaea viscosa var. angustifolia*	LC	Not Endemic	
Scrophulariaceae	*Aptosimum procumbens*	LC	Not Endemic	
Thymelaeaceae	*Lasiosiphon capitatus*	LC	Endemic	
Verbenaceae	*Lippia javanica*	LC	Not Endemic	
Vitaceae	*Rhoicissus tridentata*	LC	Not Endemic	

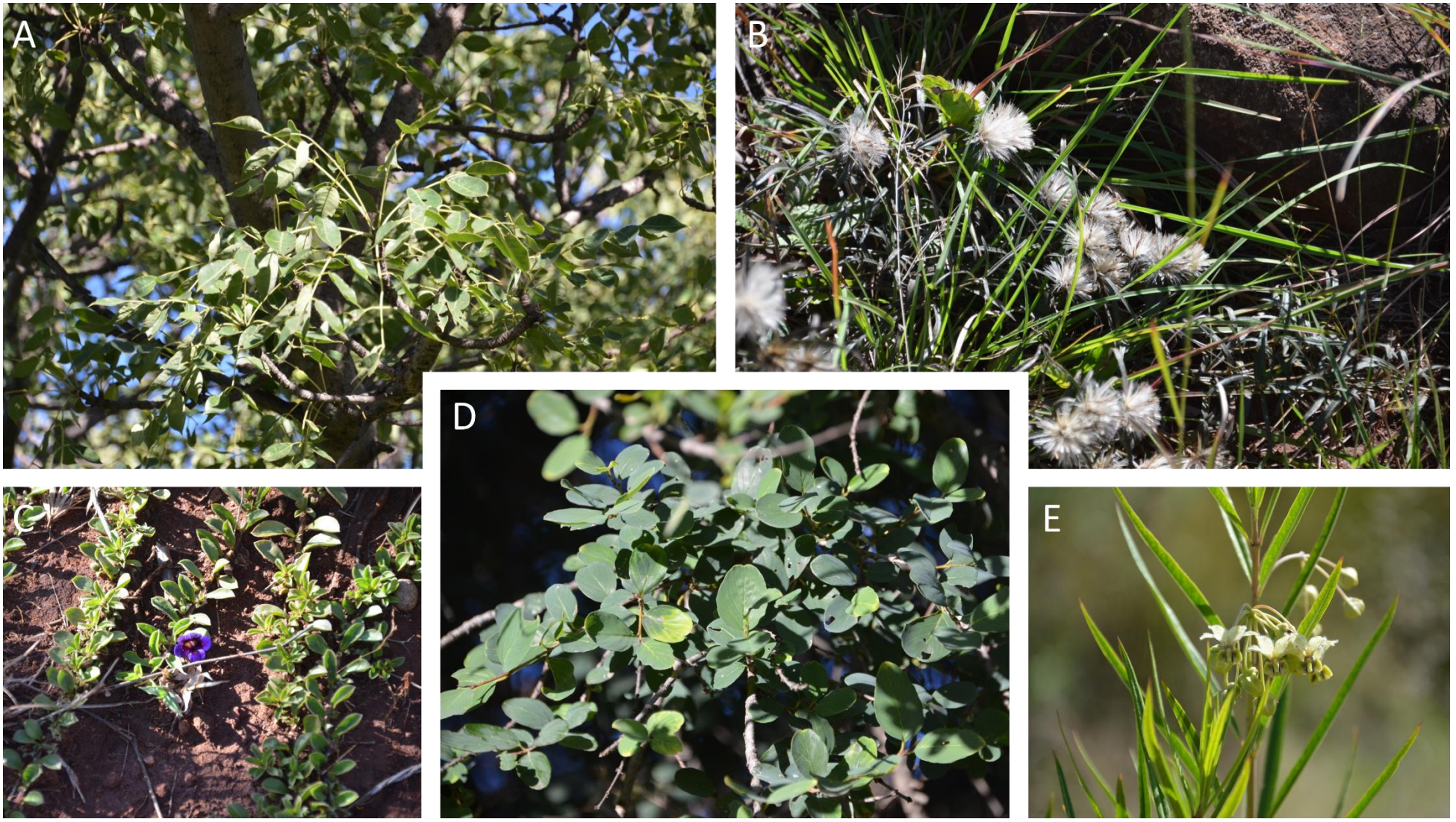

Figure 3-10 ***Photographs illustrating some of the flora recorded within the assessment area. A) Sclerocarya birrea subsp caffra (protected), B) Dicoma anomala, C) Aptosimum procumbens, D) Berchemia zeyheri (protected) and E) Gomphocarpus fruticosus.***

3.2.1.2 Invasive Alien Plants

Invasive Alien Plants (IAPs) tend to dominate or replace indigenous flora, thereby transforming the structure, composition and functioning of ecosystems. Therefore, it is important that these plants are controlled by means of an eradication and monitoring programme. Some invader plants may also degrade ecosystems through superior competitive capabilities to exclude native plant species.

NEMBA is the most recent legislation pertaining to alien invasive plant species. In August 2014, the list of Alien Invasive Species was published in terms of the NEMBA. The Alien and Invasive Species Regulations were published in the Government Gazette No. 43726, 18 September 2020. The legislation calls for the removal and / or control of IAP species (Category 1 species). In addition, unless authorised thereto in terms of the NWA, no land user shall allow Category 2 plants to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland. Category 3 plants are also prohibited from occurring within proximity to a watercourse. Below is a brief explanation of the three (3) categories in terms of the NEMBA:

- *Category 1a*: Invasive species requiring compulsory control. Remove and destroy. Any specimens of Category 1a listed species need, by law, to be eradicated from the environment. **No permits will be issued**.
- *Category 1b*: Invasive species requiring compulsory control as part of an invasive species control programme. Remove and destroy. These plants are deemed to have such a high invasive potential that infestations can qualify to be placed under a government sponsored invasive species management programme. **No permits will be issued**.
- *Category 2*: Invasive species regulated by area. A demarcation permit is required to import, possess, grow, breed, move, sell, buy or accept as a gift any plants listed as Category 2 plants. **No permits will be issued for Category 2 plants to exist in riparian zones**.
- *Category 3*: Invasive species regulated by activity. An individual plant permit is required to undertake any of the following restricted activities (import, possess, grow, breed, move, sell, buy or accept as a gift) involving a Category 3 species. **No permits will be issued for Category 3 plants to exist in riparian zones**.

Note that according to the Alien and Invasive Species Regulations, a person who has under his or her control a Category 1b listed invasive species must immediately:

- Notify the competent authority in writing
- Take steps to manage the listed invasive species in compliance with:
    - Section 75 of the NEMBA;
    - The relevant invasive species management programme developed in terms of regulation 4; and
    - Any directive issued in terms of section 73(3) of the NEMBA.

Table 3-6 presents the IAP recorded in the PAOI. Plants listed as Category 1 alien or invasive species under the NEM:BA. Plants listed in Category 2 or as 'not indigenous' or 'naturalised' according to NEM:BA, appear in blue text.

Table 3-6 IAP species recorded on the PAOI.

Family	*Scientific Name*	Threat Status (SANBI, 2021)	SA Endemic	Alien Category
Amaranthaceae	*Achyranthes aspera*			Not indigenous; Naturalised
Amaranthaceae	*Alternanthera pungens*			Not indigenous; Naturalised
Amaranthaceae	*Gomphrena celosioides*			Not indigenous; Naturalised
Asteraceae	*Bidens pilosa*			Not indigenous; Naturalised
Asteraceae	*Conyza bonariensis*			Not indigenous; Naturalised
Asteraceae	*Flaveria bidentis*			NEMBA Category 1b.
Asteraceae	*Schkuhria pinnata*			Not indigenous; Naturalised

Asteraceae	*Tagetes minuta*			Not indigenous; Naturalised
Asteraceae	*Zinnia peruviana*			Not indigenous; Naturalised
Asteraceae	*Tithonia rotundifolia*			NEMBA Category 1b.
Bignoniaceae	*Tecoma stans*			NEMBA Category 1b.
Cactaceae	*Opuntia ficus-indica*			NEMBA Category 1b.
Meliaceae	*Melia azedarach*			NEMBA Category 1b.
Poaceae	*Pennisetum clandestinum*			NEMBA Category 1b in protected areas and wetlands.
Poaceae	*Pennisetum setaceum*			NEMBA Category 1b.
Verbenaceae	*Lantana camara*			NEMBA Category 1b.

Eight (8) IAP species were recorded on the PAOI. These species are listed under the Alien and Invasive Species List 2020, Government Gazette No. GN1003 as Category 1b. These IAP species must be controlled by implementing an IAP Management Programme, in compliance of Section 75 of the NEM:BA, as stated above.

3.2.1.3 Protected Trees

During the field assessment two (2) species of protected trees were observed: *Berchemia zeyheri* (Pink-Ivory) and *Sclerocarya birrea* subsp *caffra* (Marula). The protected trees observed are protected by the List of Protected Tree Species under the National Forests Act, 1998 (Act No. 84 of 1998) (NFA). In terms of the NFA, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate, or in any other manner acquire or dispose of any protected tree or any product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated. Contravention of this declaration is regarded as a first category offence. The locations of the trees recorded in the PAOI can be seen in Figure 3-11. The trees marked were those observed during the field assessment, it is expected that there are several more.

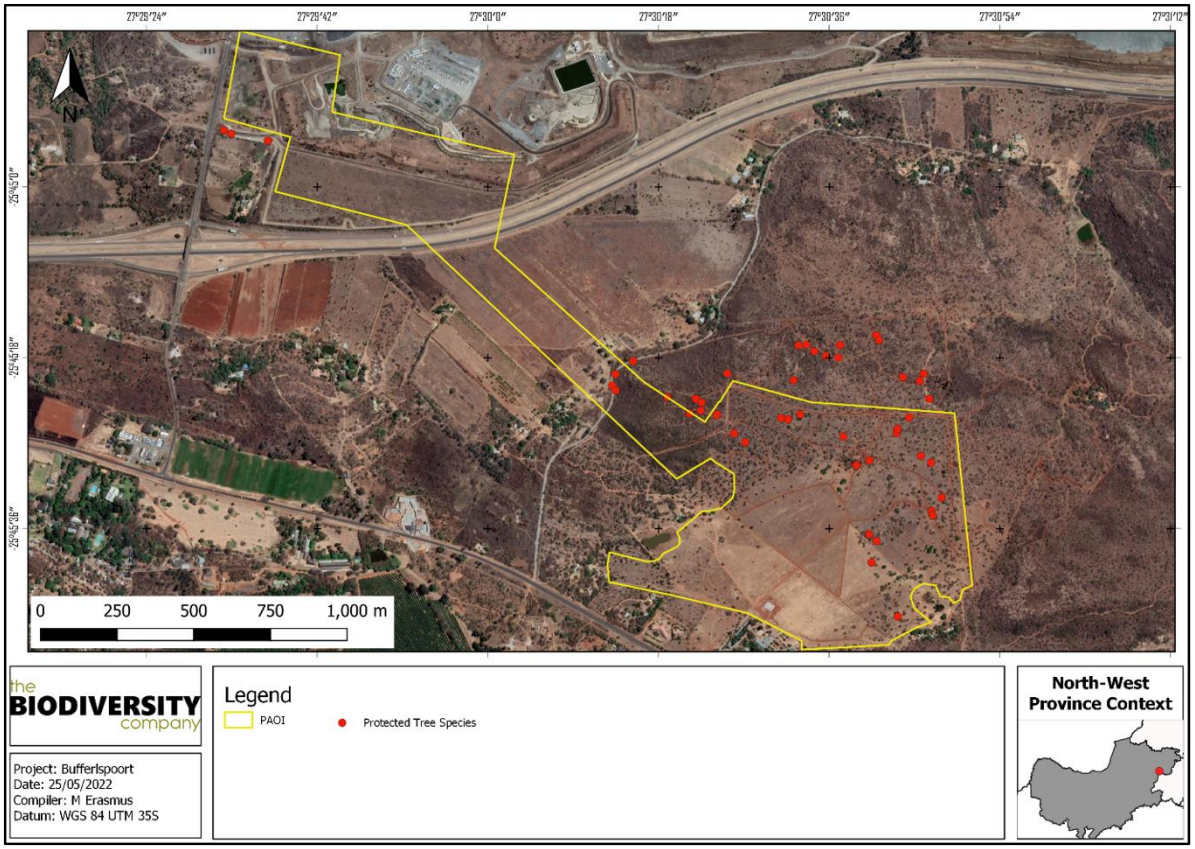

Figure 3-11 Location of protected flora species.

3.2.2 Faunal Assessment

Herpetofauna and mammal observations and recordings fall under this section. A separate avifaunal report was compiled for this Project.

3.2.2.1 Amphibians and Reptiles

Four (4) species of reptile and no species of amphibians were recorded on the PAOI during the survey period (Table 3-7). However, there is the possibility of more species being present, as certain reptile species are secretive and require long-term surveys to ensure capture. None of the species recorded are regarded as threatened.

Table 3-7 Summary of herpetofauna species recorded within the PAOI.

Species	Common Name	Conservation Status	
		Regional (SANBI, 2016)	Global (IUCN, 2022)
Reptiles			
Acanthocercus atricollis	Tree agama	LC	LC
Lygodactylus capensis	Cape dwarf gecko	LC	LC
Trachylepis punctatissima	Speckled Rock Skink	LC	Unlisted
Trachylepis varia	Variable Skink	LC	LC

3.2.2.2 Mammals

Ten (10) mammal species were observed in total based on either direct observation or the presence of visual tracks and signs. Five (5) of these species could naturally occur outside of protected areas/game farms ,while five (5) species are considered mainly found restricted to protected areas/game farms (managed and fences areas), as 'captive' species, in this case due current land use being a game farm, (Table 3-8) (Figure 3-12).

No SCC were observed.

Table 3-8 Summary of mammal species recorded within the PAOI. Mammal species are considered 'captive' species as these were only present within the game farm areas, marked in green text.

Species	Common Name	Conservation Status	
		Regional (SANBI, 2016)	IUCN (2022)
Aepyceros melampus	Impala	LC	LC
Chlorocebus pygerythrus	Vervet Monkey	LC	LC
Connochaetes taurinus	Blue Wildebeest	LC	LC
Damaliscus pygargus phillipsi	Bleskbok	LC	LC
Hystrix africaeaustralis	Cape Porcupine	LC	LC
Lepus saxatilis	Scrub Hare	LC	LC
Taurotragus oryx	Eland	LC	LC
Papio ursinus	Chacma Baboon	LC	LC
Paraxerus cepapi	Tree Squirrel	LC	LC
Tragelaphus angasii	Njala	LC	LC

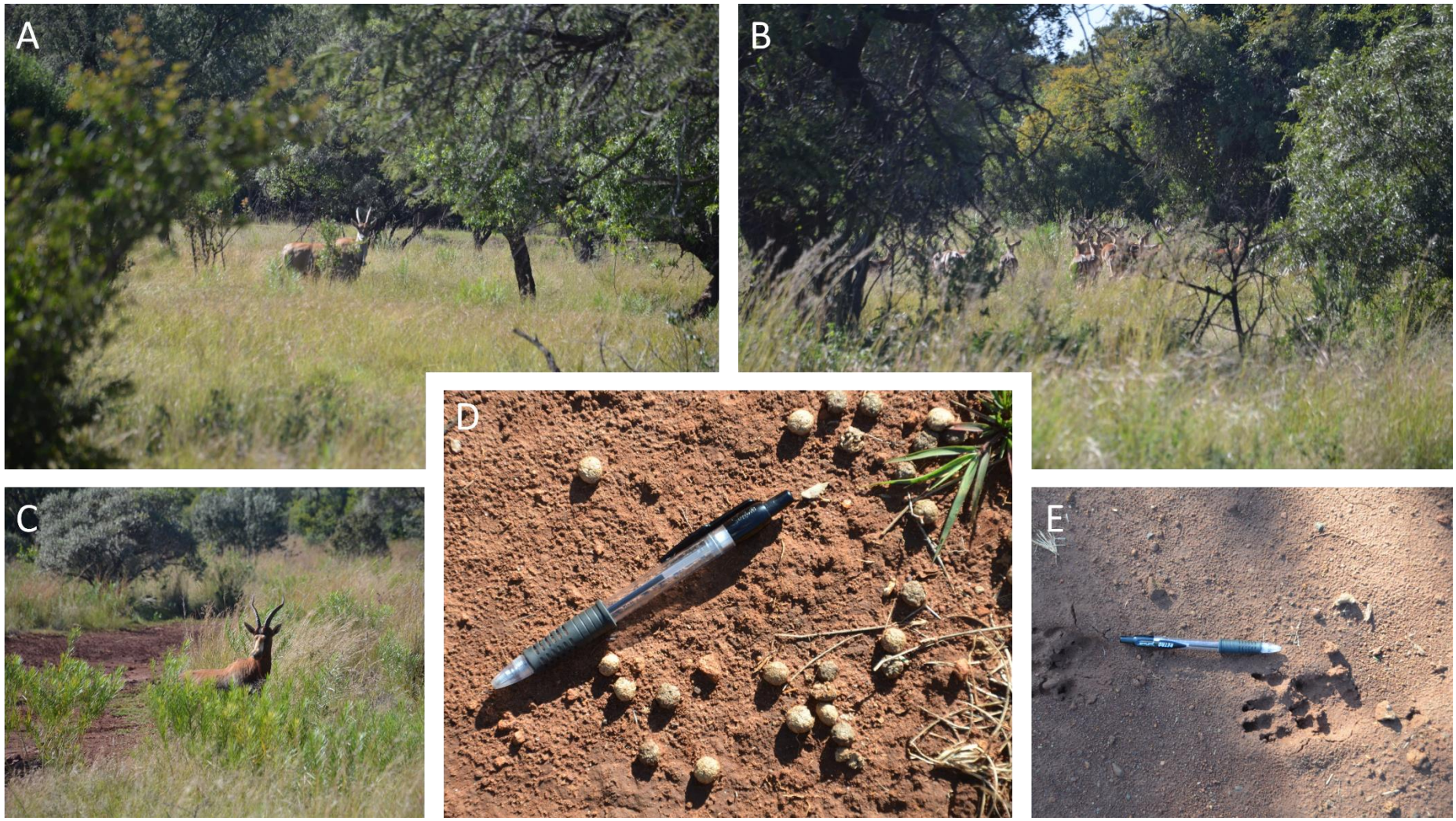

Figure 3-12 ***Photographs illustrating the mammal species recorded within the PAOI during the survey period. A) Taurotragus oryx, B) Aepyceros melampus, C) Damaliscus pygargus phillipsi, D) Lepus saxatilis and E) Hystrix africaeaustralis***

4 Habitat Assessment and Site Ecological Importance

4.1 Habitat Assessment

The main habitat types identified across the PAOI were initially identified largely based on aerial imagery. These main habitat types were refined based on the field coverage and data collected during the survey; the delineated habitats can be seen in Figure 4-1. Emphasis was placed on limiting timed meander searches within the natural habitats and therefore habitats with a higher potential of hosting SCC. Four (4) habitats were identified in the PAOI, each of the habitats identified are discussed in the sub-sections below.

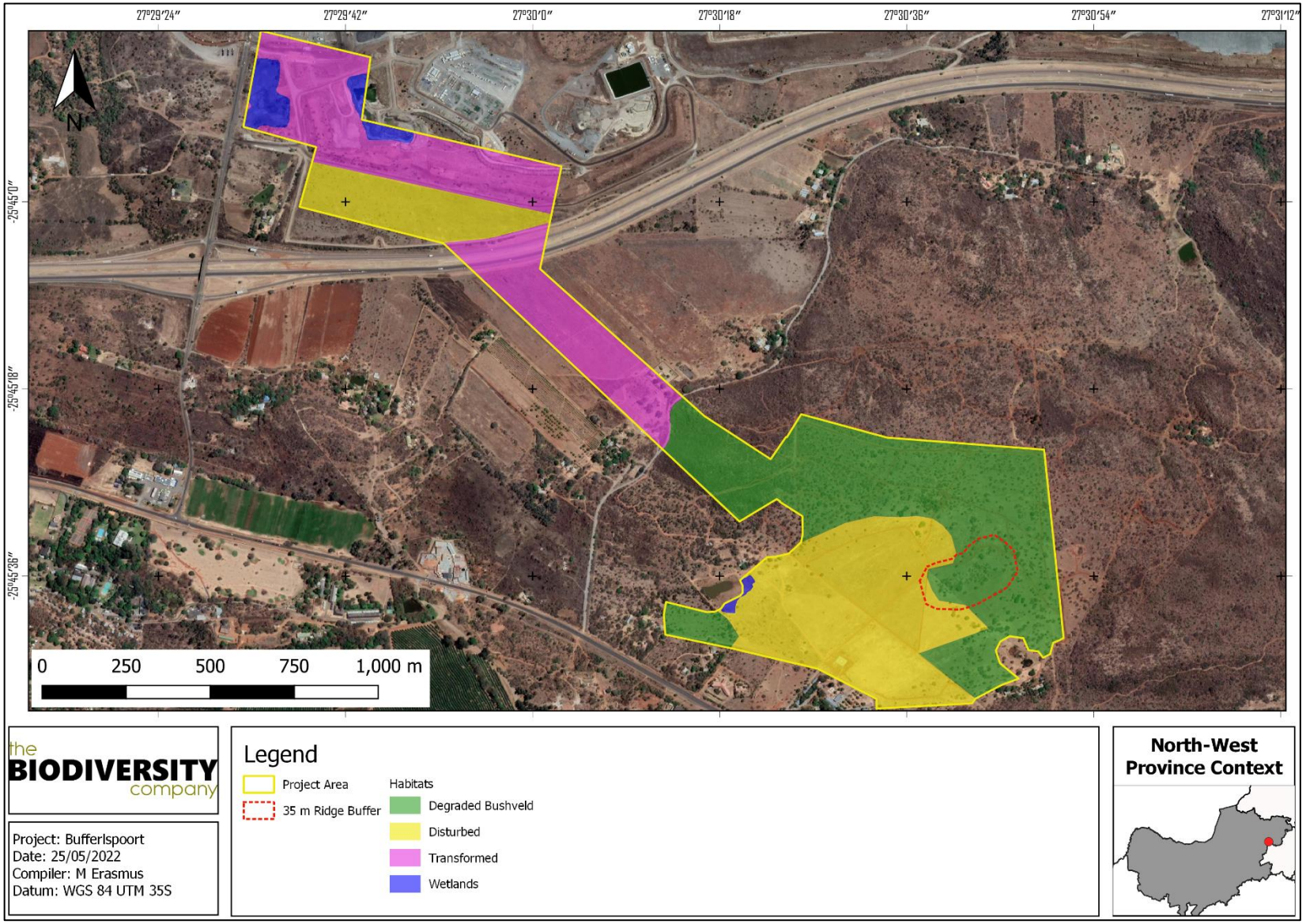

Figure 4-1 Habitats identified in the PAOI

Degraded Bushveld

This habitat type is regarded as semi-natural bushveld, but slightly disturbed due to the presence of roads, mismanagement (overgrazing) and also human infringement as it is being used as a game farm (Figure 4-2 and Figure 4-3). This habitat represents typical mountain bushveld, with rocky extrusions and/or rocky boulders in certain areas, especially the portion to the northern boundary of the PAOI. The current ecological condition of this habitat regarding the main driving forces, are intact, which is evident in the amount and importance of the species recorded in the faunal assessment; and the high species diversity and number of plant species recorded. Current human infringement occurs, especially in areas close to roads, however it is limited due to the current land use being a game farm. The difference between this habitat and the disturbed bushveld is the extent of the disturbance in the disturbed bushveld being more severe.

This habitat unit can be regarded as important, not only within the local landscape, but also regionally. The unit functions as remaining greenlands which supports viable plant species populations and is also used for foraging. The unit also serves as a movement corridor for fauna within a landscape fragmented. The habitat sensitivity is regarded as high sensitivity due to the role of this intact habitat to biodiversity within an area being more fragmented locally, which is supported by the various ecological datasets. This habitat functions as the CBA 2 it is classified as, a viable constituent of and EN ecosystem, NPAES, IBA as well as biosphere reserve.

Figure 4-2 A typical example of degraded Bushveld habitat from the PAOI

Figure 4-3 A typical example of degraded Bushveld habitat from the PAOI.

Disturbed Bushveld

This habitat is regarded as areas that have been impacted more by historic land clearing, mismanagement and land use (Figure 4-4). Historical vegetation clearing for what is assumed cultivation has led to an absence of large woody plants and an area dominated by grasses, with current grazing activities by game also taking place within this area. These habitats aren't entirely transformed but in a constant disturbed state, as they can't recover to a more natural state due to ongoing disturbances and impacts received from grazing and mismanagement. These areas are considered to have a low sensitivity, as they may be used as a movement corridor and in many cases form a barrier between the more degraded bushveld and the transformed areas.

Figure 4-4 A typical example of disturbed Bushveld habitat from the PAOI.

Transformed

This habitat unit represents all areas of agriculture, mining areas as well as the associated secondary roads (Figure 4-5 and Figure 4-6). The transformed areas have little to no remaining natural vegetation due to land transformation by mining areas, agriculture and roads. These habitats exist in a constant disturbed state as it cannot recover to a more natural state unless through human intervention.

Figure 4-5 Illustration of transformed habitat from the PAOI.

Figure 4-6 Illustration of transformed habitat from the PAOI.

Wetlands

Wetlands are identified in the wetland report, and include wetlands and manmade dams (TBC, 2022). Even though somewhat disturbed, the ecological integrity, importance and functioning of these areas play a crucial role as a water resource system and an important habitat for various fauna and flora (Figure 4-7).

Figure 4-7 Illustration of wetland habitat from the PAOI.

4.2 Site Ecological Importance (SEI)

The biodiversity theme sensitivity, as indicated in the screening report, was derived to be Very High, mainly due to the PAOI being with an CBA 2 and ESA 1 & 2 and NPAES (Figure 4-8), while both the animal and plant species theme is classified as medium sensitivity.

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Critical biodiveristy area 2
Very High	Ecological support area 1
Very High	Ecological support area 2
Very High	Protected Areas Expansion Strategy
Very High	Vulnerable ecosystem

Figure 4-8 Terrestrial Biodiversity Theme Sensitivity, TBC Screening Report

The completion of the terrestrial biodiversity assessment confirmed the very high sensitivity of degraded bushveld habitats that overlap with the screening report and therefore corroborates the screening report in that regard.

As per the terms of reference for the Project, GIS sensitivity maps are required in order to identify sensitive features in terms of the relevant specialist discipline/s within the PAOI. The sensitivity scores identified during the field survey for each terrestrial habitat are mapped.

Four (4) different terrestrial habitat types were delineated within the PAOI. Based on the criteria provided in Section 2.2 of this report, all habitats within the assessment area of the proposed Project were allocated a sensitivity category Table 4-1. The sensitivities of the habitat types delineated are illustrated in Figure 4-9.

Table 4-1 Summary of habitat types delineated within the PAOI

Habitat	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance
Degraded Bushveld	Medium	High	Medium	Low	High
Wetlands	Medium	Medium	Medium	Low	Medium
Disturbed Bushveld	Medium	Low	Low	Medium	Low
Transformed	Very Low	Very Low	Very Low	Low	Very Low

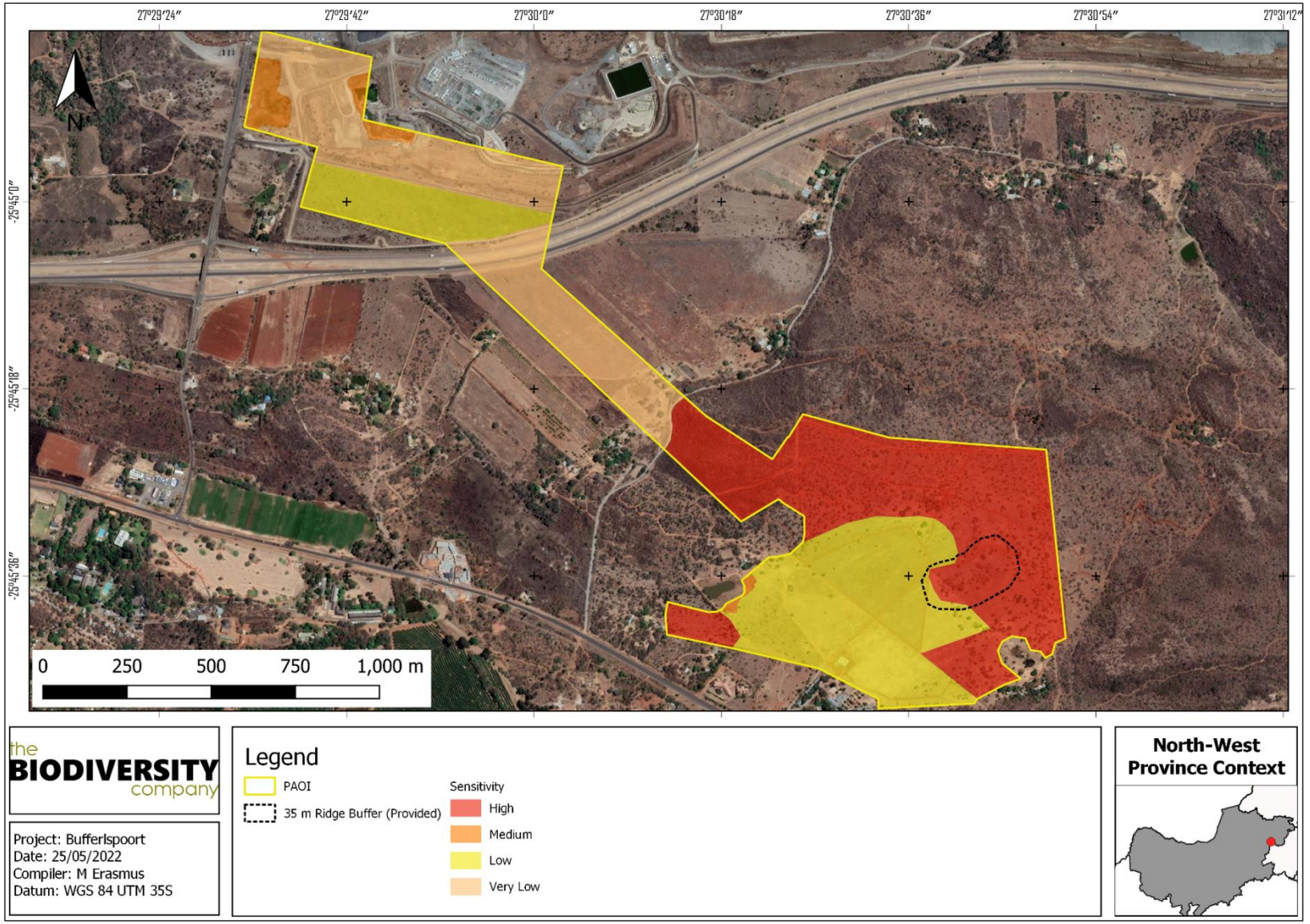

Figure 4-9 Sensitivity of the proposed PAOI.

5 Impact Risk Assessment

5.1 Biodiversity: Risk Assessment Method

The assessment of the significance of direct, indirect and cumulative impacts was undertaken using the method as developed by Savannah. The assessment of the impact considers the following, the:

- Nature of the impact, which shall include a description of what causes the effect, what will be affected, and how it will be affected;
- Extent of the impact, indicating whether the impact will be local or regional;
- Duration of the impact, very short-term duration (0-1 year), short-term duration (2-5 years), medium-term (5-15 years), long-term (> 15 years) or permanent;
- Probability of the impact, describing the likelihood of the impact actually occurring, indicated as improbable, probable, highly probable or definite;
- Severity/beneficial scale, indicating whether the impact will be very severe/beneficial (a permanent change which cannot be mitigated/permanent and significant benefit with no real alternative to achieving this benefit); severe/beneficial (long-term impact that could be mitigated/long-term benefit); moderately severe/beneficial (medium- to long-term impact that could be mitigated/ medium- to long-term benefit); slight; or have no effect;
- Significance, which shall be determined through a synthesis of the characteristics described above and can be assessed as low medium or high;
- Status, which will be described as either positive, negative or neutral;
- Degree to which the impact can be reversed;
- Degree to which the impact may cause irreplaceable loss of resources; and
- Degree to which the impact can be mitigated.

5.1.1 Present Impacts to Biodiversity

Considering the anthropogenic activities and influences within the landscape, several negative impacts to biodiversity were observed within the PAOI. These include:

- Mining activities;
- Present energy distribution infrastructure, including powerlines;
- Historical land clearing and land-use;
- Invasive species;
- Roads and associated vehicle traffic and road kills; and
- Fences.

Figure 5-1 Photographs illustrating impacts to biodiversity A) Roads), B) Road servitude and fencing and C) Mining stockpiles

5.1.2 Identification of Additional Potential Impacts

The potential impacts during the construction and operation phases of the Project are presented in Table 5-1.

Table 5-1 Potential impacts to biodiversity associated with the proposed activity

Main Impact	Project activities that can cause loss/impacts to habitat (especially with regard to the proposed infrastructure areas):	Secondary impacts anticipated
1. Destruction, fragmentation and degradation of habitats and ecosystems	Physical removal of vegetation, including protected species.	Displacement/loss of flora & fauna (including possible SCC)
	Access roads and servitudes	Increased potential for soil erosion
	Soil dust precipitation	Habitat fragmentation
	Dumping of waste products	Increased potential for establishment of alien & invasive vegetation
	Random events such as fire (cooking fires or cigarettes)	Erosion
Main Impact	**Project activities that can cause the spread and/or establishment of alien and/or invasive species**	**Secondary impacts anticipated**
2. Spread and/or establishment of alien and/or invasive species	Vegetation removal	Habitat loss for native flora & fauna (including SCC)
	Vehicles potentially spreading seed	Spreading of potentially dangerous diseases due to invasive and pest species
	Unsanitary conditions surrounding infrastructure promoting the establishment of alien and/or invasive rodents	Alteration of fauna assemblages due to habitat modification
	Creation of infrastructure suitable for breeding activities of alien and/or invasive birds	
Main Impact	**Project activities that can cause direct mortality of fauna**	**Secondary impacts anticipated**
3. Direct mortality of fauna	Clearing of vegetation	Loss of habitat
		Loss of ecosystem services
	Roadkill due to vehicle collision	
	Pollution of water resources due to dust effects, chemical spills, etc.	Increase in rodent populations and associated disease risk
	Intentional killing of fauna for food (hunting)	
Main Impact	**Project activities that can cause reduced dispersal/migration of fauna**	**Secondary impacts anticipated**
4. Reduced dispersal/migration of fauna	Loss of landscape used as corridor	Reduced dispersal/migration of fauna
		Loss of ecosystem services
	Compacted roads	Reduced plant seed dispersal
	Removal of vegetation	
Main Impact	**Project activities that can cause pollution in watercourses and the surrounding environment**	**Secondary impacts anticipated**
5. Environmental pollution due to water runoff, spills from vehicles and erosion	Chemical (organic/inorganic) spills	Pollution in watercourses and the surrounding environment
	Erosion	Faunal mortality (direct and indirectly)
		Groundwater pollution
		Loss of ecosystem services
Main Impact	**Project activities that can cause disruption/alteration of ecological life cycles due to sensory disturbance.**	**Secondary impacts anticipated**
6.Disruption/alteration of ecological life cycles (breeding,	Operation of machinery (Large earth moving machinery, vehicles)	Disruption/alteration of ecological life cycles due to noise

Main Impact	Project activities that can cause loss/impacts to habitat (especially with regard to the proposed infrastructure areas):	Secondary impacts anticipated
migration, feeding) due to noise, dust and light pollution.		Loss of ecosystem services
	Project activities that can cause disruption/alteration of ecological life cycles due to dust	Secondary impacts associated with disruption/alteration of ecological life cycles due to dust
	Vehicles	Loss of ecosystem services
Main Impact	**Project activities that can cause staff to interact directly with potentially dangerous fauna**	**Secondary impacts anticipated**
8. Staff and others interacting directly with fauna (potentially dangerous) or poaching of animals	All unregulated/supervised activities outdoors	Loss of SCCs

5.1.3 Assessment of Impact Significance

The assessment of impact significance was undertaken in accordance with the method developed by Savannah. The various identified impacts are assessed below for the different phases of the development. The impacts assessed were considered in relation to the infrastructure layout that has been provided as well as expected (Figure 5-2).

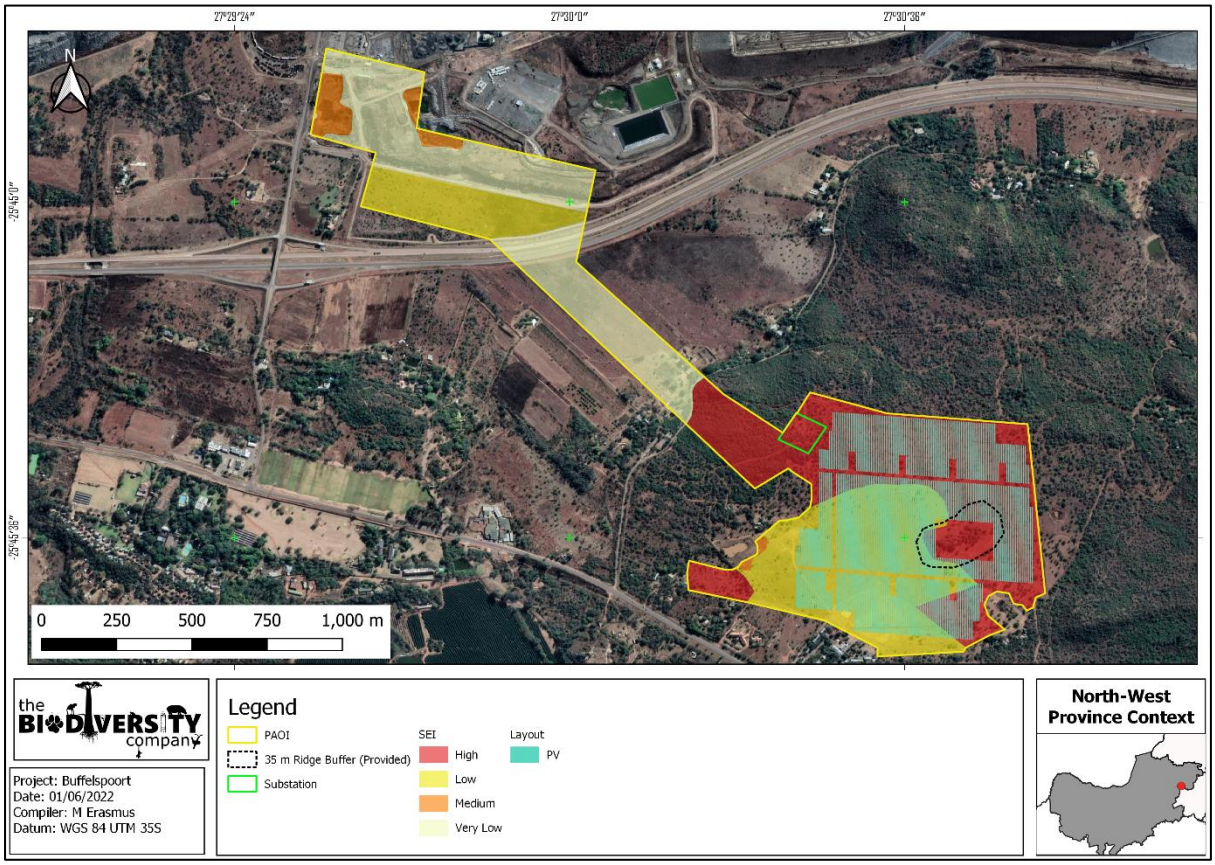

Figure 5-2 PAOI in relation to PV infrastructure layout.

5.1.3.1 Construction Phase

The following potential main impacts on the biodiversity (based on the framework above) were considered for the construction phase of the proposed development and is considered to have the largest direct impact on biodiversity. The actual footprint of the overhead powerline pylon infrastructure has a small localised, impact. It is the clearance for the areas where the solar field will be installed as well as the creation off access and service roads that is a more important aspect to consider and will

be considered in relation to the powerlines. The following potential impacts to terrestrial biodiversity were considered:

- Destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community (Table 5-2),
- Introduction of alien species, especially plants (Table 5-3);
- Destruction of protected plant species (Table 5-4); and
- Displacement of faunal community due to habitat loss, direct mortalities and disturbance (road collisions, noise, dust, vibration and poaching) (Table 5-5).

Table 5-2 Impacts to biodiversity associated with the proposed construction phase.

Impact Nature: Loss of vegetation within development footprint		
Destruction, further loss and fragmentation of the of habitats, ecosystems and vegetation community		
	Without mitigation	**With mitigation**
Extent	Regional (4)	Footprint & surrounding areas (2)
Duration	Permanent (5)	Long term (4)
Magnitude	High (8)	Low (4)
Probability	Highly probable (4)	Probable (3)
Significance	**High (68)**	**Medium (30)**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, although this impact cannot be well mitigated as the loss of vegetation/habitat is unavoidable.	
Mitigation:		
• Demarcate work areas during the construction phase to avoid affecting outside areas. Use physical barriers e.g., safety tape, not painted lines, and use signage. • Do not clear areas of indigenous vegetation outside of the direct development footprint within the PAOI. • Minimise vegetation clearing to the minimum required. • Consult a fire expert and compile and implement a fire management plan to minimise the risk of veld fires around the Project site. • Compile and implement a rehabilitation plan from the onset of the Project; • Rehabilitate areas as soon as they are no longer impacted by construction. • The rehabilitated areas must be revegetated with indigenous vegetation. • Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and bare (unvegetated) areas. • Reduce the dust generated by operational vehicles and earth moving machinery, through wetting the soil surface (with “dirty water”) and putting up signs to enforce speed limits to enforce reduced speeds. • No non-environmentally friendly suppressants may be used as this could result in pollution of water sources. • Progressive rehabilitation will enable topsoil to be returned more rapidly, thus ensuring more recruitment from the existing seedbank. Surplus rehabilitation material can be applied to other others in need of stabilisation and vegetation cover.		
Residual Impacts:		
The loss of currently intact vegetation is an unavoidable consequence of the Project and cannot be entirely mitigated.		

Table 5-3 Impacts to biodiversity associated with the proposed construction phase.

Impact Nature: Introduction of alien species, especially plants		
Degradation and loss of surrounding natural vegetation		
	Without mitigation	**With mitigation**
Extent	Regional (4)	Footprint & surrounding areas (2)
Duration	Long term (4)	Short term (2)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	**Medium (56)**	**Low (12)**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
• Compile and implement an alien vegetation management plan from the onset of construction. The plan must identify areas for action (if any) and prescribe the necessary removal methods and frequencies to be applied. This plan must be also prescribing a monitoring plan and be updated as/when new data is collated; • Implementation of a waste management plan, this plan must be also prescribe a monitoring plan and be updated as/when new data is collated. Waste management must be a priority and all waste must be collected, stored and disposed of adequately. It is recommended that all waste be removed from site on a weekly basis (as a minimum) to prevent rodents and pests entering the site. • Refuse bins will be emptied and secured. • Temporary storage of domestic waste shall be in covered waste skips. • Maximum domestic waste storage period will be 7 days. • A pest control plan must be put in place and implemented; it is imperative that poisons not be used.		
Residual Impacts:		
Long-term broad scale IAP infestation if not mitigated.		

Table 5-4 Impacts to biodiversity associated with the proposed construction phase.

Impact Nature: Destruction of protected plant species		
Construction activity will likely lead to direct loss of protected tree species		
	Without mitigation	**With mitigation**
Extent	Footprint & surrounding areas (2)	Site Specific (1)
Duration	Permanent (5)	Short term (2)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	**Medium (52)**	**Low (10)**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation:		
• Obtain relocation or destruction permits before any protected Trees are destroyed, if destruction cannot be avoided.		

Residual Impacts:
N/A

Table 5-5 Impacts to biodiversity associated with the proposed construction phase.

Impact Nature: Displacement of faunal community due to habitat loss, direct mortalities and disturbance		
Construction activity will likely lead to direct mortality of fauna due to earthworks, vehicle collisions, accidental hazardous chemical spills and persecution. Disturbance due to dust and noise pollution and vibration may disrupt behaviour.		
	Without mitigation	**With mitigation**
Extent	Regional (4)	Footprint & surrounding areas (2)
Duration	Moderate term (3)	Very short term (1)
Magnitude	High (8)	Low (4)
Probability	Highly probable (4)	Improbable (2)
Significance	**Medium (60)**	**Low (14)**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, to some extent. Noise and disturbance cannot be well mitigated, impacts on fauna due to human presence, such as vehicle collisions, poaching, and persecution can be mitigated.	
Mitigation:		
• Demarcate work areas during the construction phase to avoid affecting outside areas. Use physical barriers e.g., safety tape, not painted lines, and use signage. • A movement corridor within the PV area must be incorporated into the design in order to allow fauna to move to and from the Ridge Habitat that has been buffered and Degraded Bushveld habitat. • Minimise vegetation clearing to the minimum required. Areas should be cleared and disturbed on a needs basis only, as opposed to clearing and disturbing a number of sites simultaneously. • Provide All personnel and contractors to undergo Environmental Awareness Training to all personnel and contractors. A signed register of attendance must be kept for proof. Discussions The training must include. • The timing between clearing of an area and subsequent development must be minimized to avoid fauna from re-entering the site to be disturbed. • Any holes/deep excavations must done in a progressive manner on a needs basis only. No holes/excavations may be left open overnight. In the event holes/excavations are required to remain open overnight, these areas must be covered to prevent fauna falling into these areas and subsequently inspected prior to backfilling • Where possible, work should be restricted to one area at a time and be systematic. This is to reduce the number and extent of on-site activities, allowing fauna to move off as the Project progresses. This will give the smaller birds, mammals and reptiles a chance to weather the disturbance in an undisturbed zone close to their natural territories. • Prior to vegetation clearing activities, the area to be cleared should be walked on foot by 1-2 individuals to create a disturbance in order for fauna to move off. Sites should be disturbed only prior to the area having to be cleared, not more than 1 day in advance.		
Residual Impacts:		
It is probable that some individuals of susceptible species will be lost to construction-related activities despite mitigation. However, this is not likely to impact the viability of the local population of any fauna species.		

5.1.3.2 Operation Phase

The operational phase of the impact of daily activities is anticipated to further spread the IAP, as well as the deterioration of the habitats due to the increase of dust and edge effect impacts. Dust reduces the ability of plants to photosynthesize and thus leads to degradation/retrogression of the veld. Moving maintenance vehicles don't only cause sensory disturbances to fauna, affecting their life cycles and movement, but will lead to direct mortalities due to collisions.

The following potential impacts were considered:

- Continued fragmentation and degradation of habitats and ecosystems (Table 5-6);
- Spread of alien and/or invasive species (Table 5-7);
- Ongoing displacement and direct mortalities of faunal community due to disturbance (road collisions, noise, light and dust,) (Table 5-8).

Table 5-6 Impacts to biodiversity associated with the proposed operational phase

Impact Nature: Continued fragmentation and degradation of habitats and ecosystems		
Disturbance created during the construction phase will leave the PAOI vulnerable to erosion and IAP encroachment.		
	Without Mitigation	With Mitigation
Extent	Local Area (3)	Footprint & surrounding areas (2)
Duration	Permanent (5)	Short term (2)
Magnitude	High (8)	Low (4)
Probability	Highly probable (4)	Improbable (2)
Significance	**High (64)**	**Low (16)**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, with proper management and avoidance, this impact can be mitigated to a low level.	
Mitigation:		
• It should be made an offence for any staff to /take bring any plant species into/out of any portion of the PAOI. No plant species whether indigenous or exotic should be brought into/taken from the PAOI, to prevent the spread of exotic or invasive species or the illegal collection of plants. • Implementation of an alien vegetation management plan.		
Residual Impacts		
There is still the potential some potential for erosion and IAP encroachment even with the implementation of control measures but would have a low impact.		

Table 5-7 Impacts to biodiversity associated with the proposed operational phase.

Impact Nature: Spread of alien and/or invasive species		
Degradation and loss of surrounding natural vegetation		
	Without mitigation	**With mitigation**
Extent	Local Area (3)	Footprint & surrounding areas (2)
Duration	Long term (4)	Short term (2)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	**Medium (52)**	**Low (12)**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
• Implementation of an alien vegetation management plan.		

Impact Nature: Spread of alien and/or invasive species
Degradation and loss of surrounding natural vegetation
• Implementation of a waste management plan.
Residual Impacts:
Long term broad scale IAP infestation if not mitigated.

Table 5-8 Impacts to biodiversity associated with the proposed operational phase

Impact Nature: Ongoing displacement and direct mortalities of faunal community due to disturbance (road collisions, collisions with substation, noise, light, dust, vibration		
The operation and maintenance of the proposed development may lead to disturbance or persecution of fauna in the vicinity of the development.		
	Without Mitigation	**With Mitigation**
Extent	Local Area (3)	Footprint & surrounding areas (2)
Duration	Long term (4)	Short term (2)
Magnitude	High (8)	Low (4)
Probability	Highly probable (4)	Improbable (2)
Significance	**Medium (60)**	**Low (16)**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
• Outside lighting should be designed and limited to minimize impacts on fauna. Lighting fixtures should be fitted with baffles, hoods or louvres and directed downward. Outside lighting should be directed away from highly sensitive areas such as the wetland. Fluorescent and mercury vapor lighting should be avoided and sodium vapor (yellow) lights should be used wherever possible; • Where feasible, motion detection lighting must be used to minimise the unnecessary illumination of areas • Minimise traffic and the use of vehicle lights of the road during the night. Noise must be kept to a minimum from dusk to dawn to minimize all possible disturbances to amphibian species and nocturnal mammals.		
Residual Impacts		
Disturbance from maintenance activities will occur albeit at a low and infrequent level.		

5.1.3.3 Decommissioning Phase

This phase is when the scaling down of activities ahead of temporary or permanent closure is initiated. During this phase, the operational phase impacts will persist until of the activity reduces and the rehabilitation measures are implemented.

The following potential impacts were considered:

- Continued fragmentation and degradation of habitats and ecosystems (Table 5-9); and
    - Spread of alien and/or invasive species (Table 5-10).

Table 5-9 Impacts to biodiversity associated with the proposed decommissioning phase

Impact Nature: Continued fragmentation and degradation of habitats and ecosystems		
Disturbance created during the construction phase will leave the PAOI vulnerable to erosion and IAP encroachment.		
	Without Mitigation	With Mitigation

Impact Nature: Continued fragmentation and degradation of habitats and ecosystems		
Disturbance created during the construction phase will leave the PAOI vulnerable to erosion and IAP encroachment.		
Extent	Local Area (3)	Footprint & surrounding areas (2)
Duration	Permanent (5)	Short term (2)
Magnitude	High (8)	Low (4)
Probability	Highly probable (4)	Improbable (2)
Significance	**High (64)**	**Low (16)**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, with proper management and avoidance, this impact can be mitigated to a low level.	
Mitigation:		
• Limiting the closure and rehabilitation activities to the footprint areas only. Avoid entry/access to previously undisturbed or already rehabilitated areas. • Areas other than the footprint areas and existing surface infrastructure areas, should be declared as 'no-go' areas to vehicles (only). All essential operational staff – machinery must be limited to development area (no need to go outside the authorised area). • The rehabilitated areas must be revegetated with indigenous vegetation. • Reduce the dust generated by operational vehicles and earth moving machinery, through wetting the soil surface (with "dirty water") and putting up signs to enforce speed limits to enforce reduced speeds. • Implementation of rehabilitation plan. • Implementation of an alien vegetation management plan.		
Residual Impacts		
There is still the potential some potential for erosion and IAP encroachment even with the implementation of control measures but would have a low impact.		

Table 5-10 Impacts to biodiversity associated with the proposed decommissioning phase

Impact Nature: Spread of alien and/or invasive species		
Degradation and loss of surrounding natural vegetation		
	Without mitigation	**With mitigation**
Extent	Local Area (3)	Footprint & surrounding areas (2)
Duration	Long term (4)	Short term (2)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	**Medium (52)**	**Low (12)**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
• Ongoing implementation of an alien vegetation management plan. The updated plan must advise on the monitoring frequency post closure of the Project, and then advise on the 'completion' the plan as data is collated.		
Residual Impacts:		
Long term broad scale IAP infestation if not mitigated.		

5.1.3.4 Cumulative Impacts

Cumulative impacts are assessed in context of the extent of the proposed PAOI; other developments in the area; and general habitat loss and transformation resulting from other activities in the area.

Impact Nature: Cumulative habitat loss within the region		
The development of the proposed infrastructure will contribute to cumulative habitat loss within ESAs and thereby impact the ecological processes in the region.		
	Overall impact of the proposed development considered in isolation	**Cumulative impact of the Project and other Projects in the area**
Extent	Local Area (3)	Regional (4)
Duration	Moderate term (3)	Long term (4)
Magnitude	Moderate (6)	High (8)
Probability	Probable (3)	Probable (3)
Significance	**Medium (15)**	**Medium (19)**
Status (positive or negative)	Negative	Negative
Reversibility	High	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated	To some degree, but most of the impact results from the presence of the various facilities which cannot be well mitigated.	
Mitigation:		
Ensure that a rehabilitation plan and IAP management plan be compiled and are effectively implemented.		

5.1.4 Mitigation Measures

The following mitigation measures are applicable in general. The following measures must be incorporated into the Environmental Management Programme (EMPr):

- Do not clear areas of indigenous vegetation outside of the direct development footprints within the PAOI;
- Minimise vegetation clearing to the minimum required. Areas should be cleared and disturbed on a needs basis only, as opposed to clearing and disturbing a number of sites simultaneously;
- Demarcate work areas during the construction phase to avoid affecting outside areas. Use physical barriers e.g., safety tape, not painted lines, and use signage;
- Collect and dump waste only in designated areas;
- Use hand cutting for vegetation clearing and avoid heavy machinery, far as possible;
- Use existing access routes and paths wherever possible;
- Avoid the destruction and development of rocky areas within the Degraded Bushveld Habitat;
- Existing roads/servitudes should be considered first option over the construction of new roads/servitudes and must only be made where necessary;
- Any holes/deep excavations must done in a progressive manner on a needs basis only. No holes/excavations may be left open overnight. In the event holes/excavations are required to remain open overnight, these areas must be covered to prevent fauna falling into these areas;
- Where possible, work should be restricted to one area at a time and be systematic. This is to reduce the number and extent of on-site activities, allowing fauna to move off as the Project progresses. This will give the smaller birds, mammals and reptiles a chance to weather the disturbance in an undisturbed zone close to their natural territories;

- Prior to vegetation clearing activities, the area to be cleared should be walked on foot by 1-2 individuals to create a disturbance in order for fauna to move off. Sites should be disturbed only prior to the area having to be cleared, not more than 1 day in advance;
- Limit construction of new roads as much as possible;
- Minimise the number (and size) of laydown, storage and staff facilities for the duration of the Project;
- Consult a fire expert and compile and implement a fire management plan to minimise the risk of veld fires around the Project site;
- Compile and implement a rehabilitation plan from the onset of the Project. Progressive rehabilitation will enable topsoil to be returned more rapidly, thus ensuring more recruitment from the existing seedbank. Surplus rehabilitation material can be applied to other others in need of stabilisation and vegetation cover;
- Rehabilitate areas as soon as they are no longer impacted by construction;
- Ensure that all remaining construction materials are removed from the PAOI once the construction phase ends;
- Use preferably prefabricated buildings or those constructed of re-usable/recyclable materials;
- Ensure that staff do not bring onto or remove from the site any plants, to prevent the spread of exotic or invasive species or the illegal collection of plants;
- Store topsoil stockpiles on flat ground with minimal run-off and use bunds and/or other stabilisation methods (e.g., netting) if required to avoid erosion;
- Obtain relocation or destruction permits before any protected trees are destroyed, if destruction cannot be avoided;
- Provide Environmental Awareness Training to all personnel and contractors. A signed register of attendance must be kept for proof. The training must include:
    - Sensitive environmental receptors within the PAOI;
    - Management requirements in the Environmental Authorisation and the EMPr;
    - How to deal with any fauna species encountered during the construction process;
- Compile and implement a hydrocarbon spill management plan;
- Compile and implement an alien vegetation management plan from the onset of construction. The plan must identify areas for action (if any) and prescribe the necessary removal methods and frequencies to be applied. This plan must be also prescribe a monitoring plan and be updated as/when new data is collated;
- It should be made an offence for any staff to /take bring any plant species into/out of any portion of the PAOI. No plant species whether indigenous or exotic should be brought into/taken from the PAOI, to prevent the spread of exotic or invasive species or the illegal collection of plants
- Implementation of a waste management plan, this plan must be also prescribing a monitoring plan and be updated as/when new data is collated. Waste management must be a priority and all waste must be collected, stored and disposed of adequately. It is recommended that all waste be removed from site on a weekly basis (as a minimum) to prevent rodents and pests entering the site;
- Refuse bins will be emptied and secured;
- Temporary storage of domestic waste shall be in covered waste skips; and

- Maximum domestic waste storage period will be 7 days.
- A pest control plan must be put in place and implemented; it is imperative that poisons not be used.;
- The timing between clearing of an area and subsequent development must be minimized to avoid fauna from re-entering the site to be disturbed;
- Minimise traffic of the road during the night;
- Limiting the closure and rehabilitation activities to the footprint areas only. Avoid entry/access to previously undisturbed or already rehabilitated areas;
- The rehabilitated areas must be revegetated with indigenous vegetation;
- Areas other than the footprint areas and existing surface infrastructure areas, should be declared as 'no-go' areas to vehicles (only). All essential operational staff - machinery must be limited to development area (no need to go outside the authorised area);
- Prohibit the intentional killing, trapping or poisoning of any animals on site, including snakes, lizards, birds or other animals;
- Outside lighting should be designed and limited to minimize impacts on fauna. Lighting fixtures should be fitted with baffles, hoods or louvres and directed downward. Outside lighting should be directed away from highly sensitive areas such as the wetland. Fluorescent and mercury vapor lighting should be avoided and sodium vapor (yellow) lights should be used wherever possible;
- Where feasible, motion detection lighting must be used to minimise the unnecessary illumination of areas;
- Minimise traffic and the use of vehicle lights of road during the night;
- Noise must be kept to a minimum from dusk to dawn to minimize all possible disturbances to amphibian species and nocturnal mammals;
- Speed limits must be enforced to ensure that road killings and erosion is limited;
- Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and bare (unvegetated) areas;
- Reduce the dust generated by operational vehicles and earth moving machinery, through wetting the soil surface (with “dirty water”) and putting up signs to enforce speed limits to enforce reduced speeds; and
- No non-environmentally friendly dust suppressants may be used as this could result in pollution of water sources.

5.2 Conclusion

5.2.1 Terrestrial Biodiversity

The PAOI has been altered both currently and historically. The present land use had a direct impact on both the fauna and the flora on the PAOI, which is evident in the disturbed and transformed habitats. Historically, land clearing and the subsequent mismanagement has led to the deterioration of most of the area to a disturbed habitat that has not recovered since.

However, the degraded Bushveld habitat in the can be regarded as important, not only within the local landscape, but also regionally; as they are used for habitat, foraging and movement corridors for fauna within a landscape fragmented by development.

The degraded Bushveld habitat in the PAOI have a **High ecological theme sensitivity**.

The habitat sensitivity of the degraded Bushveld and all (artificial and natural) wetland/water resources is regarded as **high and medium respectively**, due to the species recorded and the role of this intact unique habitat to biodiversity within a very fragmented local landscape, not to mention the sensitivity according to various ecological datasets. The high sensitivity terrestrial areas still:

- Support nearby CBA/ESA's as per the conservation plan (NWBSP);
- Viable constituent of and EN ecosystem, NPAES, IBA and Biosphere Reserve; and
- Support various organisms and may play an important role in the ecosystem, if left to recover from the superficial impacts.

The ecological integrity, importance and functioning of these terrestrial biodiversity areas provide a variety of ecological services considered beneficial, with one (1) key service being the maintenance of biodiversity. The preservation of these systems is the most important aspect to consider for the proposed Project.

As per the previous sections, the PAOI has several high sensitivity areas. Development within these areas must be avoided, where possible, as this could lead to the direct destruction and loss of functional habitats; and the faunal species that are expected to utilise this habitat. If these areas are not maintained in a natural or near natural state, destroyed or fragmented, then meeting targets for biodiversity features will not be achieved.

5.3 Impact Statement

The main expected impacts of the proposed Project will include:

- Habitat loss and fragmentation;
- Degradation of surrounding habitat;
- Disturbance and displacement caused during the construction and maintenance phases; and
- Direct mortality during the construction phase.

Mitigation measures as described in this report can be implemented to reduce the significance of the risk. Considering that this area that has been identified as being of significance for biodiversity maintenance and ecological processes, development may proceed but with caution and only with the implementation of mitigation measures.

Considering the above-mentioned information, no fatal flaws are evident for the proposed Project. It is the opinion of the specialists that the proposed Project, may be favourably considered, on condition that all prescribed mitigation measures and supporting recommendations are implemented.

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7 Appendix Items

7.1 Appendix A – Flora species expected to occur in PAOI

Family	Taxon	Author	IUCN	Ecology
Fabaceae	*Abrus laevigatus*	E.Mey.	LC	Indigenous
Malvaceae	*Abutilon angulatum var. angulatum*	(Guill. & Perr.) Mast.	NE	Indigenous
Malvaceae	*Abutilon galpinii*	A.Meeuse	LC	Indigenous
Malvaceae	*Abutilon sonneratianum*	(Cav.) Sweet	LC	Indigenous
Euphorbiaceae	*Acalypha angustata*	Sond.	LC	Indigenous; Endemic
Euphorbiaceae	*Acalypha indica var. indica*	L.	LC	Indigenous
Euphorbiaceae	*Acalypha villicaulis*	Hochst. ex A.Rich.	LC	Indigenous
Apocynaceae	*Acokanthera oppositifolia*	(Lam.) Codd	LC	Indigenous
Lamiaceae	*Acrotome hispida*	Benth.	LC	Indigenous; Endemic
Passifloraceae	*Adenia digitata*	(Harv.) Engl.	LC	Indigenous
Asteraceae	*Adenostemma caffrum*	DC.	LC	Indigenous
Lamiaceae	*Aeollanthus buchnerianus*	Briq.	LC	Indigenous
Amaranthaceae	*Aerva lanata*	(L.) Juss. ex Schult.	LC	Indigenous
Amaranthaceae	*Aerva sp.*			
Rubiaceae	*Afrocanthium mundianum*	(Cham. & Schltdl.) Lantz	LC	Indigenous
Iridaceae	*Afrosolen sandersonii subsp. sandersonii*	(Baker) Goldblatt & J.C.Manning		Indigenous; Endemic
Loranthaceae	*Agelanthus natalitius subsp. zeyheri*	(Meisn.) Polhill & Wiens; (Harv.) Polhill & Wiens	LC	Indigenous
Fabaceae	*Albizia anthelmintica*	(A.Rich.) Brongn.	LC	Indigenous
Orobanchaceae	*Alectra orobanchoides*	Benth.	LC	Indigenous
Poaceae	*Alloteropsis semialata subsp. semialata*	(R.Br.) Hitchc.	LC	Indigenous
Cyatheaceae	*Alsophila dregei*	(Kunze) R.M.Tryon	LC	Indigenous
Fabaceae	*Alysicarpus zeyheri*	Harv.	LC	Indigenous
Lythraceae	*Ammannia sagittifolia var. sagittifolia*	(Sond.) S.A.Graham & Gandhi		Indigenous; Endemic
Apocynaceae	*Ancylobothrys capensis*	(Oliv.) Pichon	LC	Indigenous; Endemic
Poaceae	*Andropogon eucomus*	Nees	LC	Indigenous
Poaceae	*Andropogon schirensis*	Hochst. ex A.Rich.	LC	Indigenous
Commelinaceae	*Aneilema hockii*	De Wild.	LC	Indigenous
Melastomataceae	*Antherotoma debilis*	(Sond.) Jacq.-Fel.	LC	Indigenous
Anthocerotaceae	*Anthoceros natalensis*	Steph.		Indigenous
Icacinaceae	*Apodytes dimidiata subsp. dimidiata*	E.Mey. ex Arn.	LC	Indigenous
Scrophulariaceae	*Aptosimum sp.*			
Archidiaceae	*Archidium acanthophyllum*	Snider		Indigenous

Poaceae	*Aristida adscensionis*	L.	LC	Indigenous
Poaceae	*Aristida aequiglumis*	Hack.	LC	Indigenous
Poaceae	*Aristida bipartita*	(Nees) Trin. & Rupr.	LC	Indigenous
Poaceae	*Arundinella nepalensis*	Trin.	LC	Indigenous
Apocynaceae	*Asclepias aurea*	(Schltr.) Schltr.	LC	Indigenous
Apocynaceae	*Asclepias densiflora*	N.E.Br.	LC	Indigenous
Cyperaceae	*Ascolepis capensis*	(Kunth) Ridl.	LC	Indigenous
Asparagaceae	*Asparagus angusticladus*	(Jessop) J.-P.Lebrun & Stork	LC	Indigenous
Asparagaceae	*Asparagus flavicaulis subsp. flavicaulis*	(Oberm.) Fellingham & N.L.Mey.	LC	Indigenous
Asparagaceae	*Asparagus plumosus*	Baker	LC	Indigenous
Asparagaceae	*Asparagus transvaalensis*	(Oberm.) Fellingham & N.L.Mey.	LC	Indigenous; Endemic
Asparagaceae	*Asparagus virgatus*	Baker	LC	Indigenous
Apocynaceae	*Aspidoglossum glabrescens*	(Schltr.) Kupicha	LC	Indigenous; Endemic
Aspleniaceae	*Asplenium friesiorum*	C.Chr.	LC	Indigenous
Aspleniaceae	*Asplenium phillipsianum*	(Kummerle) Bir, Fraser-Jenk. & Lovis	LC	Indigenous
Aytoniaceae	*Asterella bachmannii*	(Steph.) S.W.Arnell		Indigenous
Aytoniaceae	*Asterella muscicola*	(Steph.) S.W.Arnell		Indigenous
Polytrichaceae	*Atrichum androgynum*	(Mull.Hal.) A.Jaeger		Indigenous
Iridaceae	*Babiana bainesii*	Baker	LC	Indigenous
Acanthaceae	*Barleria pretoriensis*	C.B.Clarke	LC	Indigenous; Endemic
Acanthaceae	*Barleria sp.*			
Begoniaceae	*Begonia cucullata*	Willd.		Not indigenous; Naturalised
Asteraceae	*Bidens pilosa*	L.		Not indigenous; Naturalised
Blechnaceae	*Blechnum australe subsp. australe*	L.	LC	Indigenous
Acanthaceae	*Blepharis leendertziae*	Oberm.	LC	Indigenous
Orchidaceae	*Bonatea saundersioides*	(Kraenzl. & Schltr.) Cortesi	LC	Indigenous
Capparaceae	*Boscia albitrunca*	(Burch.) Gilg & Gilg-Ben.	LC	Indigenous
Poaceae	*Bothriochloa bladhii*	(Retz.) S.T.Blake	LC	Indigenous
Poaceae	*Bothriochloa insculpta*	(Hochst. ex A.Rich.) A.Camus	LC	Indigenous
Poaceae	*Brachiaria deflexa*	(Schumach.) C.E.Hubb. ex Robyns	LC	Indigenous
Poaceae	*Brachiaria xantholeuca*	(Schinz) Stapf	LC	Indigenous
Phyllanthaceae	*Bridelia mollis*	Hutch.	LC	Indigenous
Bryaceae	*Bryum argenteum*	Hedw.		Indigenous
Bryaceae	*Bryum pycnophyllum*	(Dixon) Mohamed		Indigenous
Scrophulariaceae	*Buddleja saligna*	Willd.	LC	Indigenous

Asphodelaceae	*Bulbine angustifolia*	Poelln.	LC	Indigenous; Endemic
Cyperaceae	*Bulbostylis burchellii*	(Ficalho & Hiern) C.B.Clarke	LC	Indigenous
Fabaceae	*Burkea africana*	Hook.	LC	Indigenous
Burmanniaceae	*Burmannia madagascariensis*	Mart.	LC	Indigenous
Capparaceae	*Cadaba aphylla*	(Thunb.) Wild	LC	Indigenous
Pilotrichaceae	*Callicostella tristis*	(Mull.Hal.) Broth.		Indigenous
Leucobryaceae	*Campylopus pilifer var. pilifer*	Brid.		Indigenous
Leucobryaceae	*Campylopus robillardei*	Besch.		Indigenous
Leucobryaceae	*Campylopus sp.*			
Rubiaceae	*Canthium suberosum*	Codd	LC	Indigenous; Endemic
Cyperaceae	*Carex rhodesiaca*	Nelmes	LC	Indigenous
Cyperaceae	*Carex spartea*	Wahlenb.		Indigenous
Cyperaceae	*Carex spicatopaniculata*	Boeckeler ex C.B.Clarke	LC	Indigenous
Apocynaceae	*Carissa bispinosa*	(L.) Desf. ex Brenan	LC	Indigenous
Apocynaceae	*Ceropegia barberae*	(Harv. ex Hook.f.) Bruyns		Indigenous
Apocynaceae	*Ceropegia gracilior*	Bruyns		Indigenous
Fabaceae	*Chamaecrista biensis*	(Steyaert) Lock	LC	Indigenous
Verbenaceae	*Chascanum hederaceum var. hederaceum*	(Sond.) Moldenke	LC	Indigenous; Endemic
Pteridaceae	*Cheilanthes hirta var. brevipilosa forma laxa*	Sw.; W.Jacobsen & N.H.G.Jacobsen; (Kunze) W.Jacobsen & N.H.G.Jacobsen		Indigenous; Endemic
Pteridaceae	*Cheilanthes involuta var. obscura*	(Sw.) Schelpe & N.C.Anthony; (N.C.Anthony) N.C.Anthony	LC	Indigenous
Pteridaceae	*Cheilanthes viridis var. glauca*	(Forssk.) Sw.; (Sim) Schelpe & N.C.Anthony	LC	Indigenous
Pteridaceae	*Cheilanthes viridis var. viridis*	(Forssk.) Sw.	LC	Indigenous
Gentianaceae	*Chironia purpurascens subsp. humilis*	(E.Mey.) Benth. & Hook.f.; (Gilg) I.Verd.	LC	Indigenous
Poaceae	*Chloris virgata*	Sw.	LC	Indigenous
Poaceae	*Chrysopogon serrulatus*	Trin.	LC	Indigenous
Asteraceae	*Cineraria parvifolia*	Burtt Davy	LC	Indigenous; Endemic
Cucurbitaceae	*Citrullus lanatus*	(Thunb.) Matsum. & Nakai	LC	Indigenous
Ranunculaceae	*Clematis brachiata*	Thunb.	LC	Indigenous
Cleomaceae	*Cleome sp.*			
Peraceae	*Clutia pulchella var. pulchella*	L.	LC	Indigenous
Peraceae	*Clutia sp.*			
Cucurbitaceae	*Coccinia adoensis*	(A.Rich.) Cogn.	LC	Indigenous
Colchicaceae	*Colchicum melanthioides subsp. melanthioides*	(Willd.) J.C.Manning & Vinn.	LC	Indigenous; Endemic
Cyperaceae	*Coleochloa setifera*	(Ridl.) Gilly	LC	Indigenous

Combretaceae	*Combretum hereroense*	Schinz		Indigenous
Combretaceae	*Combretum molle*	R.Br. ex G.Don	LC	Indigenous
Combretaceae	*Combretum zeyheri*	Sond.	LC	Indigenous
Commelinaceae	*Commelina africana var. krebsiana*	L.; (Kunth) C.B.Clarke	LC	Indigenous
Commelinaceae	*Commelina africana var. lancispatha*	L.; C.B.Clarke	LC	Indigenous
Commelinaceae	*Commelina livingstonii*	C.B.Clarke	LC	Indigenous
Convolvulaceae	*Convolvulus aschersonii*	Engl.	LC	Indigenous
Convolvulaceae	*Convolvulus sagittatus*	Thunb.	LC	Indigenous
Asteraceae	*Conyza ulmifolia*	(Burm.f.) Kuntze		Indigenous
Corbichoniaceae	*Corbichonia decumbens*	(Forssk.) Exell	LC	Indigenous
Malvaceae	*Corchorus argillicola*	M.J.Moeaha & P.J.D.Winter		Indigenous; Endemic
Malvaceae	*Corchorus aspleniifolius*	Burch.	LC	Indigenous
Caryophyllaceae	*Corrigiola litoralis subsp. litoralis var. litoralis*	L.	NE	Indigenous
Acanthaceae	*Crabbea angustifolia*	Nees	LC	Indigenous; Endemic
Acanthaceae	*Crabbea hirsuta*	Harv.	LC	Indigenous
Crassulaceae	*Crassula setulosa var. setulosa forma setulosa*	Harv.	NE	Indigenous
Amaryllidaceae	*Crinum graminicola*	I.Verd.	LC	Indigenous
Euphorbiaceae	*Croton gratissimus var. subgratissimus*	Burch.; (Prain) Burtt Davy	LC	Indigenous
Asteraceae	*Curio talinoides*	(DC.) P.V.Heath	DD	Indigenous; Endemic
Araliaceae	*Cussonia spicata*	Thunb.	LC	Indigenous
Commelinaceae	*Cyanotis lapidosa*	E.Phillips	LC	Indigenous; Endemic
Orobanchaceae	*Cycnium adonense*	E.Mey. ex Benth.	LC	Indigenous
Apocynaceae	*Cynanchum viminale subsp. viminale*	(L.) L.		Indigenous
Poaceae	*Cynodon dactylon*	(L.) Pers.	LC	Indigenous
Cyperaceae	*Cyperus albostriatus*	Schrad.	LC	Indigenous; Endemic
Cyperaceae	*Cyperus capensis*	(Steud.) Endl.	LC	Indigenous; Endemic
Cyperaceae	*Cyperus congestus*	Vahl	LC	Indigenous
Cyperaceae	*Cyperus cyperoides subsp. pseudoflavus*	(L.) Kuntze; (Kuk.) Lye	LC	Indigenous
Cyperaceae	*Cyperus denudatus*	L.f.	LC	Indigenous
Cyperaceae	*Cyperus esculentus var. esculentus*	L.	LC	Indigenous
Cyperaceae	*Cyperus leptocladus*	Kunth	LC	Indigenous; Endemic
Cyperaceae	*Cyperus obtusiflorus var. obtusiflorus*	Vahl	LC	Indigenous
Cyperaceae	*Cyperus rupestris var. rupestris*	Kunth	LC	Indigenous
Cyperaceae	*Cyperus sphaerospermus*	Schrad.	LC	Indigenous

Lobeliaceae	*Cyphia rogersii subsp. rogersii*	S.Moore	LC	Indigenous; Endemic
Amaranthaceae	*Cyphocarpa angustifolia*	(Moq.) Lopr.	LC	Indigenous
Vitaceae	*Cyphostemma lanigerum*	(Harv.) Desc. ex Wild & R.B.Drumm.	LC	Indigenous
Vitaceae	*Cyphostemma puberulum*	(C.A.Sm.) Wild & R.B.Drumm.	LC	Indigenous
Vitaceae	*Cyphostemma sandersonii*	(Harv.) Desc.	LC	Indigenous; Endemic
Vitaceae	*Cyphostemma sulcatum*	(C.A.Sm.) J.J.M.van der Merwe	LC	Indigenous; Endemic
Amaryllidaceae	*Cyrtanthus breviflorus*	Harv.	LC	Indigenous
Euphorbiaceae	*Dalechampia capensis*	A.Spreng.	LC	Indigenous
Euphorbiaceae	*Dalechampia sp.*			
Apiaceae	*Deverra burchellii*	(DC.) Eckl. & Zeyh.	LC	Indigenous
Poaceae	*Diandrochloa namaquensis*	(Nees) De Winter	LC	Indigenous
Pedaliaceae	*Dicerocaryum sp.*			
Poaceae	*Dichanthium annulatum var. papillosum*	(Forssk.) Stapf; (A.Rich.) de Wet & Harlan	LC	Indigenous
Fabaceae	*Dichrostachys cinerea subsp. africana var. africana*	(L.) Wight & Arn.; Brenan & Brummitt	NE	Indigenous
Asteraceae	*Dicoma anomala subsp. gerrardii*	Sond.; (Harv. ex F.C.Wilson) S.Ortiz & Rodr.Oubina	LC	Indigenous
Asteraceae	*Dicoma macrocephala*	DC.	LC	Indigenous
Poaceae	*Digitaria ternata*	(A.Rich.) Stapf	LC	Indigenous
Poaceae	*Digitaria velutina*	(Forssk.) P.Beauv.	LC	Indigenous
Dioscoreaceae	*Dioscorea retusa*	Mast.	LC	Indigenous; Endemic
Ebenaceae	*Diospyros lycioides subsp. lycioides*	Desf.	LC	Indigenous
Hyacinthaceae	*Dipcadi marlothii*	Engl.	LC	Indigenous
Hyacinthaceae	*Dipcadi papillatum*	Oberm.	LC	Indigenous
Hyacinthaceae	*Dipcadi viride*	(L.) Moench	LC	Indigenous
Asteraceae	*Doellia cafra*	(DC.) Anderb.	LC	Indigenous
Salicaceae	*Dovyalis zeyheri*	(Sond.) Warb.	LC	Indigenous
Droseraceae	*Drosera collinsiae*	N.E.Br.	LC	Indigenous; Endemic
Fabaceae	*Dumasia villosa var. villosa*	DC.	LC	Indigenous
Verbenaceae	*Duranta erecta*	L.		Not indigenous; Naturalised; Invasive
Poaceae	*Echinochloa colona*	(L.) Link	LC	Indigenous
Polygonaceae	*Emex australis*	Steinh.	LC	Indigenous
Rubiaceae	*Empogona lanceolata*	(Sond.) Tosh & Robbr.		Indigenous; Endemic
Sapotaceae	*Englerophytum magalismontanum*	(Sond.) T.D.Penn.	LC	Indigenous
Poaceae	*Enneapogon cenchroides*	(Licht. ex Roem. & Schult.) C.E.Hubb.	LC	Indigenous
Equisetaceae	*Equisetum ramosissimum subsp. ramosissimum*	Desf.	LC	Indigenous
Poaceae	*Eragrostis barrelieri*	Daveau	NE	Not indigenous; Naturalised
Poaceae	*Eragrostis capensis*	(Thunb.) Trin.	LC	Indigenous

Poaceae	*Eragrostis cilianensis*	(All.) Vignolo ex Janch.	LC	Indigenous
Poaceae	*Eragrostis curvula*	(Schrad.) Nees	LC	Indigenous
Poaceae	*Eragrostis heteromera*	Stapf	LC	Indigenous
Poaceae	*Eragrostis hierniana*	Rendle	LC	Indigenous
Poaceae	*Eragrostis nindensis*	Ficalho & Hiern	LC	Indigenous
Asteraceae	*Erigeron primulifolius*	(Lam.) Greuter		Not indigenous; Naturalised; Invasive
Fabaceae	*Eriosema burkei var. burkei*	Benth. ex Harv.	LC	Indigenous
Fabaceae	*Eriosema pauciflorum var. pauciflorum*	Klotzsch	LC	Indigenous
Erpodiaceae	*Erpodium coronatum subsp. transvaaliense*	(Hook.f. & Wilson) Mitt.; (Broth. & Wager) Magill		Indigenous
Fabaceae	*Erythrina lysistemon*	Hutch.	LC	Indigenous
Fabaceae	*Erythrina sp.*			
Sapindaceae	*Erythrophysa transvaalensis*	I.Verd.	LC	Indigenous
Euphorbiaceae	*Euphorbia cooperi var. cooperi*	N.E.Br. ex A.Berger		Indigenous
Euphorbiaceae	*Euphorbia davyi*	N.E.Br.	LC	Indigenous
Euphorbiaceae	*Euphorbia heterophylla*	L.	NE	Not indigenous; Naturalised
Convolvulaceae	*Evolvulus alsinoides*	(L.) L.	LC	Indigenous
Gentianaceae	*Exochaenium grande*	(E.Mey.) Griseb.	LC	Indigenous
Rubiaceae	*Fadogia homblei*	De Wild.	LC	Indigenous
Proteaceae	*Faurea saligna*	Harv.	LC	Indigenous
Moraceae	*Ficus abutilifolia*	(Miq.) Miq.	LC	Indigenous
Moraceae	*Ficus ingens var. ingens*	(Miq.) Miq.		Indigenous
Moraceae	*Ficus salicifolia*	Vahl	LC	Indigenous
Moraceae	*Ficus thonningii*	Blume		Indigenous
Cyperaceae	*Fimbristylis dichotoma subsp. dichotoma*	(L.) Vahl	LC	Indigenous
Poaceae	*Fingerhuthia africana*	Lehm.	LC	Indigenous; Endemic
Fissidentaceae	*Fissidens ovatus*	Brid.		Indigenous
Fissidentaceae	*Fissidens sciophyllus*	Mitt.		Indigenous
Commelinaceae	*Floscopa glomerata*	(Willd. ex Schult. & Schult.f.) Hassk.	LC	Indigenous
Phyllanthaceae	*Flueggea virosa subsp. virosa*	(Roxb. ex Willd.) Royle	LC	Indigenous
Iridaceae	*Freesia grandiflora subsp. grandiflora*	(Baker) Klatt	LC	Indigenous; Endemic
Aizoaceae	*Frithia pulchra*	N.E.Br.	LC	Indigenous; Endemic
Asteraceae	*Geigeria burkei subsp. burkei var. burkei*	Harv.	NE	Indigenous
Asteraceae	*Geigeria burkei subsp. burkei var. zeyheri*	Harv.	NE	Indigenous
Iridaceae	*Gladiolus dalenii subsp. dalenii*	Van Geel	LC	Indigenous
Iridaceae	*Gladiolus permeabilis subsp. edulis*	D.Delaroche; (Burch. ex Ker Gawl.) Oberm.	LC	Indigenous
Iridaceae	*Gladiolus sericeovillosus subsp. calvatus*	Hook.f.; (Baker) Goldblatt	LC	Indigenous

Iridaceae	*Gladiolus vinosomaculatus*	Kies	LC	Indigenous; Endemic
Gleicheniaceae	*Gleichenia polypodioides*	(L.) Sm.	LC	Indigenous
Asteraceae	*Gnaphalium filagopsis*	Hilliard & B.L.Burtt	LC	Indigenous
Apocynaceae	*Gomphocarpus fruticosus*	(L.) W.T.Aiton		Indigenous
Apocynaceae	*Gomphocarpus glaucophyllus*	Schltr.	LC	Indigenous
Malvaceae	*Grewia flava*	DC.	LC	Indigenous
Malvaceae	*Grewia flavescens*	Juss.	LC	Indigenous
Malvaceae	*Grewia monticola*	Sond.	LC	Indigenous
Malvaceae	*Grewia occidentalis var. occidentalis*	L.	LC	Indigenous
Malvaceae	*Grewia sp.*			
Malvaceae	*Grewia subspathulata*	N.E.Br.	LC	Indigenous
Gunneraceae	*Gunnera perpensa*	L.	LC	Indigenous
Celastraceae	*Gymnosporia buxifolia*	(L.) Szyszyl.	LC	Indigenous
Celastraceae	*Gymnosporia polyacantha subsp. vaccinifolia*	Szyszyl.; (P.Conrath) Jordaan	LC	Indigenous; Endemic
Celastraceae	*Gymnosporia tenuispina*	(Sond.) Szyszyl.	LC	Indigenous; Endemic
Amaryllidaceae	*Haemanthus humilis subsp. humilis*	Jacq.	LC	Indigenous; Endemic
Stilbaceae	*Halleria lucida*	L.	LC	Indigenous
Asteraceae	*Helichrysum argyrosphaerum*	DC.	LC	Indigenous
Asteraceae	*Helichrysum callicomum*	Harv.	LC	Indigenous
Asteraceae	*Helichrysum cerastioides var. cerastioides*	DC.	LC	Indigenous
Asteraceae	*Helichrysum difficile*	Hilliard	LC	Indigenous
Asteraceae	*Helichrysum harveyanum*	Wild	LC	Indigenous
Asteraceae	*Helichrysum kraussii*	Sch.Bip.	LC	Indigenous
Asteraceae	*Helichrysum mixtum var. mixtum*	(Kuntze) Moeser	NE	Indigenous
Asteraceae	*Helichrysum nudifolium var. nudifolium*	(L.) Less.	LC	Indigenous
Asteraceae	*Helichrysum nudifolium var. oxyphyllum*	(L.) Less.; (DC.) Beentje	LC	Indigenous
Asteraceae	*Helichrysum polycladum*	Klatt	LC	Indigenous
Asteraceae	*Helichrysum sp.*			
Asteraceae	*Helichrysum stenopterum*	DC.	LC	Indigenous
Rhamnaceae	*Helinus integrifolius*	(Lam.) Kuntze	LC	Indigenous
Rhamnaceae	*Helinus sp.*			
Malvaceae	*Hermannia boraginiflora*	Hook.	LC	Indigenous
Malvaceae	*Hermannia burkei*	Burtt Davy	LC	Indigenous; Endemic
Malvaceae	*Hermannia depressa*	N.E.Br.	LC	Indigenous
Malvaceae	*Hermannia floribunda*	Harv.	LC	Indigenous
Malvaceae	*Hermannia grisea*	Schinz	LC	Indigenous; Endemic
Malvaceae	*Hermannia quartiniana*	A.Rich.	LC	Indigenous

Malvaceae	*Hermannia sp.*			
Amaranthaceae	*Hermbstaedtia odorata var. odorata*	(Burch.) T.Cooke	NE	Indigenous
Apiaceae	*Heteromorpha arborescens var. abyssinica*	(Spreng.) Cham. & Schltdl.; (Hochst. ex A.Rich.) H.Wolff	LC	Indigenous
Malvaceae	*Hibiscus engleri*	K.Schum.	LC	Indigenous
Malvaceae	*Hibiscus lunariifolius*	Willd.	LC	Indigenous
Malvaceae	*Hibiscus marlothianus*	K.Schum.	LC	Indigenous; Endemic
Malvaceae	*Hibiscus pusillus*	Thunb.	LC	Indigenous
Malvaceae	*Hibiscus sidiformis*	Baill.	LC	Indigenous
Malvaceae	*Hibiscus sp.*			
Malvaceae	*Hibiscus subreniformis*	Burtt Davy	LC	Indigenous
Asteraceae	*Hilliardiella elaeagnoides*	(DC.) Swelank. & J.C.Manning		Indigenous
Apocynaceae	*Huernia transvaalensis*	Stent	LC	Indigenous; Endemic
Poaceae	*Hyparrhenia anamesa*	Clayton	LC	Indigenous
Poaceae	*Hyparrhenia dregeana*	(Nees) Stapf ex Stent	LC	Indigenous
Poaceae	*Hyparrhenia hirta*	(L.) Stapf	LC	Indigenous
Poaceae	*Hyparrhenia tamba*	(Steud.) Stapf	LC	Indigenous
Hypericaceae	*Hypericum lalandii*	Choisy	LC	Indigenous
Acanthaceae	*Hypoestes forskaolii*	(Vahl) R.Br.	LC	Indigenous
Hypoxidaceae	*Hypoxis iridifolia*	Baker	LC	Indigenous
Hypoxidaceae	*Hypoxis rigidula var. pilosissima*	Baker; Baker	LC	Indigenous
Poaceae	*Imperata cylindrica*	(L.) P.Beauv.		Indigenous
Fabaceae	*Indigofera daleoides var. daleoides*	Benth. ex Harv.	NE	Indigenous
Fabaceae	*Indigofera heterotricha*	DC.	LC	Indigenous
Fabaceae	*Indigofera hilaris var. hilaris*	Eckl. & Zeyh.	LC	Indigenous
Fabaceae	*Indigofera melanadenia*	Benth. ex Harv.	LC	Indigenous
Fabaceae	*Indigofera oxytropis*	Benth. ex Harv.	LC	Indigenous; Endemic
Convolvulaceae	*Ipomoea bolusiana*	Schinz	LC	Indigenous
Convolvulaceae	*Ipomoea coscinosperma*	Hochst. ex Choisy	LC	Indigenous
Convolvulaceae	*Ipomoea gracilisepala*	Rendle	LC	Indigenous
Convolvulaceae	*Ipomoea magnusiana*	Schinz	LC	Indigenous
Convolvulaceae	*Ipomoea oblongata*	E.Mey. ex Choisy	LC	Indigenous
Convolvulaceae	*Ipomoea obscura var. obscura*	(L.) Ker Gawl.	LC	Indigenous
Convolvulaceae	*Ipomoea papilio*	Hallier f.	LC	Indigenous
Convolvulaceae	*Ipomoea transvaalensis*	A.Meeuse	LC	Indigenous
Poaceae	*Ischaemum afrum*	(J.F.Gmel.) Dandy	LC	Indigenous
Acanthaceae	*Isoglossa woodii*	C.B.Clarke	LC	Indigenous; Endemic

Cyperaceae	*Isolepis costata*	Hochst. ex A.Rich.	LC	Indigenous
Cyperaceae	*Isolepis fluitans var. fluitans*	(L.) R.Br.	LC	Indigenous
Pylaisiadelphaceae	*Isopterygium leucophanes*	(Hampe ex Mull.Hal.) A.Jaeger		Indigenous
Pylaisiadelphaceae	*Isopterygium leucopsis*	(Mull.Hal.) Paris		Indigenous; Endemic
Pylaisiadelphaceae	*Isopterygium punctulatum*	Broth. & Wager		Indigenous; Endemic
Scrophulariaceae	*Jamesbrittenia burkeana*	(Benth.) Hilliard	LC	Indigenous
Oleaceae	*Jasminum breviflorum*	Harv. ex C.H.Wright	LC	Indigenous
Euphorbiaceae	*Jatropha sp.*			
Juncaceae	*Juncus exsertus*	Buchenau	LC	Indigenous
Juncaceae	*Juncus sp.*			
Acanthaceae	*Justicia anagalloides*	(Nees) T.Anderson	LC	Indigenous
Crassulaceae	*Kalanchoe rotundifolia*	(Haw.) Haw.	LC	Indigenous
Aizoaceae	*Khadia acutipetala*	(N.E.Br.) N.E.Br.	LC	Indigenous; Endemic
Achariaceae	*Kiggelaria africana*	L.	LC	Indigenous
Asphodelaceae	*Kniphofia ensifolia subsp. ensifolia*	Baker	LC	Indigenous
Rubiaceae	*Kohautia caespitosa subsp. brachyloba*	Schnizl.; (Sond.) D.Mantell	LC	Indigenous
Cyperaceae	*Kyllinga alba*	Nees	LC	Indigenous
Cyperaceae	*Kyllinga melanosperma*	Nees	LC	Indigenous
Anacardiaceae	*Lannea discolor*	(Sond.) Engl.	LC	Indigenous
Verbenaceae	*Lantana rugosa*	Thunb.	LC	Indigenous
Thymelaeaceae	*Lasiosiphon capitatus*	(L.f.) Burtt Davy	LC	Indigenous; Endemic
Thymelaeaceae	*Lasiosiphon sericocephalus*	(Meisn.) J.C.Manning & Boatwr.	LC	Indigenous; Endemic
Hyacinthaceae	*Ledebouria atrobrunnea*	S.Venter	LC	Indigenous; Endemic
Hyacinthaceae	*Ledebouria cooperi*	(Hook.f.) Jessop	LC	Indigenous
Hyacinthaceae	*Ledebouria ovatifolia*	(Baker) Jessop		Indigenous; Endemic
Fabaceae	*Leobordea divaricata*	Eckl. & Zeyh.	LC	Indigenous
Lamiaceae	*Leonotis sp.*			
Poaceae	*Leptochloa eleusine*	(Nees) Cope & N.Snow	LC	Indigenous; Endemic
Limeaceae	*Limeum viscosum subsp. viscosum var. viscosum*	(J.Gay) Fenzl	NE	Indigenous
Leskeaceae	*Lindbergia haplocladioides*	Dixon		Indigenous
Leskeaceae	*Lindbergia viridis*	Dixon		Indigenous
Cyperaceae	*Lipocarpha chinensis*	(Osbeck) J.Kern	LC	Indigenous
Verbenaceae	*Lippia javanica*	(Burm.f.) Spreng.	LC	Indigenous
Verbenaceae	*Lippia scaberrima*	Sond.	LC	Indigenous; Endemic

Lobeliaceae	*Lobelia sp.*			
Celastraceae	*Maytenus albata*	(N.E.Br.) E.Schmidt bis & Jordaan	LC	Indigenous; Endemic
Celastraceae	*Maytenus sp.*			
Celastraceae	*Maytenus undata*	(Thunb.) Blakelock	LC	Indigenous
Malvaceae	*Melhania prostrata*	DC.	LC	Indigenous
Poaceae	*Melinis repens subsp. repens*	(Willd.) Zizka	LC	Indigenous
Fabaceae	*Melolobium microphyllum*	(L.f.) Eckl. & Zeyh.	LC	Indigenous
Oleaceae	*Menodora africana*	Hook.	LC	Indigenous; Endemic
Dennstaedtiaceae	*Microlepia speluncae*	(L.) T.Moore	LC	Indigenous
Sapotaceae	*Mimusops zeyheri*	Sond.	LC	Indigenous
Anemiaceae	*Mohria vestita*	Baker	LC	Indigenous
Cucurbitaceae	*Momordica balsamina*	L.	LC	Indigenous
Lobeliaceae	*Monopsis decipiens*	(Sond.) Thulin	LC	Indigenous
Geraniaceae	*Monsonia sp.*			
Myricaceae	*Morella serrata*	(Lam.) Killick	LC	Indigenous
Fabaceae	*Mundulea sericea subsp. sericea*	(Willd.) A.Chev.	LC	Indigenous
Asteraceae	*Nidorella auriculata*	DC.	LC	Indigenous
Asteraceae	*Nidorella sp.*			
Urticaceae	*Obetia tenax*	(N.E.Br.) Friis	LC	Indigenous
Ochnaceae	*Ochna holstii*	Engl.	LC	Indigenous
Ochnaceae	*Ochna pulchra*	Hook.f.	LC	Indigenous
Lamiaceae	*Ocimum americanum var. americanum*	L.	LC	Indigenous
Lamiaceae	*Ocimum gratissimum subsp. gratissimum var. gratissimum*	L.	NE	Indigenous
Lamiaceae	*Ocimum obovatum subsp. obovatum var. obovatum*	E.Mey. ex Benth.	NE	Indigenous
Calymperaceae	*Octoblepharum albidum*	Hedw.		Indigenous
Oleaceae	*Olea capensis subsp. enervis*	L.; (Harv. ex C.H.Wright) I.Verd.	LC	Indigenous
Oleaceae	*Olea europaea subsp. cuspidata*	L.; (Wall. ex G.Don) Cif.		Indigenous
Oleandraceae	*Oleandra distenta*	Kunze	LC	Indigenous
Asteraceae	*Oocephala staehelinoides*	(Harv.) H.Rob. & Skvarla		Indigenous; Endemic
Ophioglossaceae	*Ophioglossum polyphyllum var. polyphyllum*	A.Braun	LC	Indigenous
Fabaceae	*Ophrestia oblongifolia var. oblongifolia*	(E.Mey.) H.M.L.Forbes	LC	Indigenous; Endemic
Poaceae	*Oplismenus hirtellus*	(L.) P.Beauv.	LC	Indigenous
Lamiaceae	*Orthosiphon suffrutescens*	(Thonn.) J.K.Morton	LC	Indigenous
Osmundaceae	*Osmunda regalis*	L.	LC	Indigenous
Santalaceae	*Osyris lanceolata*	Hochst. & Steud.	LC	Indigenous
Fabaceae	*Otholobium nigricans*	C.H.Stirt.	LC	Indigenous; Endemic

Anacardiaceae	*Ozoroa paniculosa var. paniculosa*	(Sond.) R.Fern. & A.Fern.	LC	Indigenous
Anacardiaceae	*Ozoroa paniculosa var. salicina*	(Sond.) R.Fern. & A.Fern.; (Sond.) R.Fern. & A.Fern.	LC	Indigenous
Apocynaceae	*Pachycarpus concolor subsp. concolor*	E.Mey.	LC	Indigenous; Endemic
Lycopodiaceae	*Palhinhaea cernua*	(L.) Vasc. & Franco		Indigenous
Sapindaceae	*Pappea capensis*	Eckl. & Zeyh.	LC	Indigenous
Molluginaceae	*Paramollugo nudicaulis*	(Lam.) Thulin		Indigenous
Chrysobalanaceae	*Parinari capensis subsp. capensis*	Harv.	LC	Indigenous
Poaceae	*Paspalum distichum*	L.	LC	Not indigenous; Naturalised; Invasive
Poaceae	*Paspalum urvillei*	Steud.	NE	Not indigenous; Naturalised; Invasive
Passifloraceae	*Passiflora edulis*	Sims		Not indigenous; Naturalised; Invasive
Rubiaceae	*Pavetta gardeniifolia var. subtomentosa*	A.Rich.; K.Schum.	LC	Indigenous
Rubiaceae	*Pavetta sp.*			
Malvaceae	*Pavonia burchellii*	(DC.) R.A.Dyer	LC	Indigenous
Malvaceae	*Pavonia sp.*			
Fabaceae	*Pearsonia sessilifolia subsp. sessilifolia*	(Harv.) Dummer	LC	Indigenous
Geraniaceae	*Pelargonium luridum*	(Andrews) Sweet	LC	Indigenous
Pteridaceae	*Pellaea calomelanos var. calomelanos*	(Sw.) Link	LC	Indigenous
Pteridaceae	*Pellaea dura var. dura*	(Willd.) Hook.	LC	Indigenous
Pteridaceae	*Pellaea pectiniformis*	Baker	LC	Indigenous
Rubiaceae	*Pentanisia angustifolia*	(Hochst.) Hochst.	LC	Indigenous
Cucurbitaceae	*Peponium caledonicum*	(Sond.) Engl.	LC	Indigenous; Endemic
Polygonaceae	*Persicaria decipiens*	(R.Br.) K.L.Wilson	LC	Indigenous
Polygonaceae	*Persicaria lapathifolia*	(L.) Delarbre		Not indigenous; Naturalised; Invasive
Polygonaceae	*Persicaria madagascariensis*	(Meisn.) S.Ortiz & Paiva		Indigenous
Bartramiaceae	*Philonotis africana*	(Mull.Hal.) Rehmann ex Paris		Indigenous
Poaceae	*Phragmites australis*	(Cav.) Steud.	LC	Indigenous
Rhamnaceae	*Phylica paniculata*	Willd.	LC	Indigenous
Phyllanthaceae	*Phyllanthus incurvus*	Thunb.	LC	Indigenous
Phyllanthaceae	*Phyllanthus sp.*			
Rhamnaceae	*Phyllogeiton zeyheri*	(Sond.) Suess.		Indigenous
Phytolaccaceae	*Phytolacca dioica*	L.		Not indigenous; Naturalised; Invasive
Pittosporaceae	*Pittosporum viridiflorum*	Sims	LC	Indigenous
Aytoniaceae	*Plagiochasma rupestre var. rupestre*	(J.R.Forst. & G.Forst.) Steph.		Indigenous
Aytoniaceae	*Plagiochasma rupestre var. volkii*	(J.R.Forst. & G.Forst.) Steph.; Bischl.		Indigenous

Lamiaceae	*Plectranthus aliciae*	(Codd) Van Jaarsv. & T.J.Edwards	LC	Indigenous; Endemic
Lamiaceae	*Plectranthus hereroensis*	Engl.	LC	Indigenous
Lamiaceae	*Plectranthus montanus*	Benth.		Indigenous
Lamiaceae	*Plectranthus ramosior*	(Benth.) Van Jaarsv.	LC	Indigenous; Endemic
Plumbaginaceae	*Plumbago zeylanica*	L.		Indigenous
Asteraceae	*Polydora angustifolia*	(Steetz) H.Rob.	LC	Indigenous
Polygalaceae	*Polygala hottentotta*	C.Presl	LC	Indigenous
Polygalaceae	*Polygala sp.*			
Polytrichaceae	*Polytrichum commune*	Hedw.		Indigenous
Portulacaceae	*Portulaca oleracea*	L.		Not indigenous; Naturalised
Urticaceae	*Pouzolzia mixta var. mixta*	Solms	LC	Indigenous
Urticaceae	*Pouzolzia sp.*			
Proteaceae	*Protea caffra*	Meisn.		Indigenous
Proteaceae	*Protea caffra subsp. caffra*	Meisn.	LC	Indigenous
Proteaceae	*Protea gaguedi*	J.F.Gmel.	LC	Indigenous
Proteaceae	*Protea welwitschii*	Engl.	LC	Indigenous
Asteraceae	*Psiadia punctulata*	(DC.) Vatke	LC	Indigenous
Rubiaceae	*Psydrax livida*	(Hiern) Bridson	LC	Indigenous
Celastraceae	*Pterocelastrus echinatus*	N.E.Br.	LC	Indigenous
Celastraceae	*Pterocelastrus sp.*			
Amaranthaceae	*Pupalia lappacea var. lappacea*	(L.) A.Juss.	LC	Indigenous
Lamiaceae	*Pycnostachys reticulata*	(E.Mey.) Benth.	LC	Indigenous
Racopilaceae	*Racopilum capense*	Mull.Hal. ex Broth.		Indigenous
Apocynaceae	*Raphionacme galpinii*	Schltr.	LC	Indigenous; Endemic
Apocynaceae	*Raphionacme velutina*	Schltr.	LC	Indigenous
Apocynaceae	*Rauvolfia caffra*	Sond.	LC	Indigenous
Vitaceae	*Rhoicissus revoilii*	Planch.	LC	Indigenous
Vitaceae	*Rhoicissus tridentata subsp. cuneifolia*	(L.f.) Wild & R.B.Drumm.; (Eckl. & Zeyh.) Urton	NE	Indigenous
Fabaceae	*Rhynchosia albissima*	Gand.	LC	Indigenous
Fabaceae	*Rhynchosia caribaea*	(Jacq.) DC.	LC	Indigenous
Fabaceae	*Rhynchosia crassifolia*	Benth. ex Harv.	LC	Indigenous; Endemic
Fabaceae	*Rhynchosia monophylla*	Schltr.	LC	Indigenous
Fabaceae	*Rhynchosia nitens*	Benth. ex Harv.	LC	Indigenous; Endemic
Fabaceae	*Rhynchosia sordida*	(E.Mey.) Schinz	LC	Indigenous
Fabaceae	*Rhynchosia totta var. rigidula*	(Thunb.) DC.; (DC.) Moteetee & M.M.le Roux		Indigenous
Fabaceae	*Rhynchosia totta var. totta*	(Thunb.) DC.	LC	Indigenous
Fabaceae	*Rhynchosia totta var. venulosa*	(Thunb.) DC.; (Hiern) Verdc.		Indigenous

Cyperaceae	*Rhynchospora brownii*	Roem. & Schult.	LC	Indigenous
Aneuraceae	*Riccardia fastigiata*	(Lehm.) Trevis.		Indigenous
Ricciaceae	*Riccia atropurpurea*	Sim		Indigenous
Ricciaceae	*Riccia volkii*	S.W.Arnell		Indigenous
Lamiaceae	*Rotheca louwalbertsii*	(P.P.J.Herman) P.P.J.Herman & Retief	LC	Indigenous; Endemic
Rubiaceae	*Rothmannia capensis*	Thunb.	LC	Indigenous
Rubiaceae	*Rubia horrida*	(Thunb.) Puff	LC	Indigenous
Rosaceae	*Rubus cuneifolius*	Pursh		Not indigenous; Naturalised; Invasive
Rosaceae	*Rubus rigidus*	Sm.	LC	Indigenous
Acanthaceae	*Ruellia cordata*	Thunb.	LC	Indigenous
Polygonaceae	*Rumex sagittatus*	Thunb.	LC	Indigenous
Celastraceae	*Salacia rehmannii*	Schinz	LC	Indigenous; Endemic
Amaranthaceae	*Salsola glabrescens*	Burtt Davy	LC	Indigenous; Endemic
Ruscaceae	*Sansevieria aethiopica*	Thunb.	LC	Indigenous
Orchidaceae	*Satyrium hallackii subsp. ocellatum*	Bolus; (Bolus) A.V.Hall	LC	Indigenous
Dipsacaceae	*Scabiosa columbaria*	L.	LC	Indigenous
Amaryllidaceae	*Scadoxus puniceus*	(L.) Friis & Nordal	LC	Indigenous
Asteraceae	*Schistostephium crataegifolium*	(DC.) Fenzl ex Harv.	LC	Indigenous
Hyacinthaceae	*Schizocarphus nervosus*	(Burch.) Van der Merwe	LC	Indigenous
Cyperaceae	*Schoenoplectus brachyceras*	(Hochst. ex A.Rich.) Lye	LC	Indigenous
Cyperaceae	*Schoenoplectus muricinux*	(C.B.Clarke) J.Raynal	LC	Indigenous
Anacardiaceae	*Sclerocarya birrea subsp. caffra*	(A.Rich.) Hochst.; (Sond.) Kokwaro	LC	Indigenous
Salicaceae	*Scolopia zeyheri*	(Nees) Harv.	LC	Indigenous
Anacardiaceae	*Searsia chirindensis*	(Baker f.) Moffett	LC	Indigenous
Anacardiaceae	*Searsia dentata*	(Thunb.) F.A.Barkley	LC	Indigenous
Anacardiaceae	*Searsia lancea*	(L.f.) F.A.Barkley	LC	Indigenous
Anacardiaceae	*Searsia leptodictya forma leptodictya*	(Diels) T.S.Yi, A.J.Mill. & J.Wen	NE	Indigenous
Anacardiaceae	*Searsia magalismontana subsp. magalismontana*	(Sond.) Moffett	LC	Indigenous
Anacardiaceae	*Searsia pyroides var. gracilis*	(Burch.) Moffett; (Engl.) Moffett	LC	Indigenous
Anacardiaceae	*Searsia pyroides var. pyroides*	(Burch.) Moffett	LC	Indigenous
Anacardiaceae	*Searsia rigida var. margaretae*	(Mill.) F.A.Barkley; (Burtt Davy ex Moffett) Moffett	LC	Indigenous; Endemic
Anacardiaceae	*Searsia zeyheri*	(Sond.) Moffett	LC	Indigenous; Endemic
Gentianaceae	*Sebaea junodii*	Schinz	LC	Indigenous
Gentianaceae	*Sebaea sp.*			

Selaginellaceae	*Selaginella dregei*	(C.Presl) Hieron.	LC	Indigenous
Scrophulariaceae	*Selago sp.*			
Sematophyllaceae	*Sematophyllum brachycarpum*	(Hampe) Broth.		Indigenous
Asteraceae	*Senecio lydenburgensis*	Hutch. & Burtt Davy	LC	Indigenous; Endemic
Asteraceae	*Senecio sp.*			
Asteraceae	*Senecio venosus*	Harv.	LC	Indigenous; Endemic
Fabaceae	*Senegalia burkei*	(Benth.) Kyal. & Boatwr.	LC	Indigenous
Fabaceae	*Senegalia caffra*	(Thunb.) P.J.H.Hurter & Mabb.	LC	Indigenous
Fabaceae	*Senegalia erubescens*	(Welw. ex Oliv.) Kyal. & Boatwr.	LC	Indigenous
Fabaceae	*Sesbania transvaalensis*	J.B.Gillett	LC	Indigenous; Endemic
Poaceae	*Setaria incrassata*	(Hochst.) Hack.	LC	Indigenous
Poaceae	*Setaria lindenbergiana*	(Nees) Stapf	LC	Indigenous
Poaceae	*Setaria sphacelata var. torta*	(Schumach.) Stapf & C.E.Hubb. ex M.B.Moss; (Stapf) Clayton	LC	Indigenous
Malvaceae	*Sida chrysantha*	Ulbr.	LC	Indigenous
Malvaceae	*Sida cordifolia subsp. cordifolia*	L.	LC	Indigenous
Malvaceae	*Sida dregei*	Burtt Davy	LC	Indigenous
Solanaceae	*Solanum aculeatissimum*	Jacq.		Not indigenous; Naturalised
Solanaceae	*Solanum campylacanthum*	Hochst. ex A.Rich.		Indigenous
Solanaceae	*Solanum mauritianum*	Scop.		Not indigenous; Naturalised; Invasive
Solanaceae	*Solanum retroflexum*	Dunal	LC	Indigenous; Endemic
Asteraceae	*Sonchus friesii var. friesii*	Boulos	LC	Indigenous
Poaceae	*Sorghum versicolor*	Andersson	LC	Indigenous
Sphagnaceae	*Sphagnum truncatum*	Hornsch.		Indigenous
Malpighiaceae	*Sphedamnocarpus pruriens subsp. galphimiifolius*	(A.Juss.) Szyszyl.; (A.Juss.) P.D.de Villiers & D.J.Botha	LC	Indigenous
Malpighiaceae	*Sphedamnocarpus pruriens subsp. pruriens*	(A.Juss.) Szyszyl.	LC	Indigenous
Fabaceae	*Sphenostylis angustifolia*	Sond.	LC	Indigenous; Endemic
Poaceae	*Sporobolus stapfianus*	Gand.	LC	Indigenous
Brachytheciaceae	*Squamidium brasiliense*	(Hornsch.) Broth.		Indigenous
Stereophyllaceae	*Stereophyllum radiculosum*	(Hook.) Mitt.		Indigenous
Poaceae	*Stiburus alopecuroides*	(Hack.) Stapf	LC	Indigenous
Poaceae	*Stipagrostis uniplumis var. neesii*	(Licht.) De Winter; (Trin. & Rupr.) De Winter	LC	Indigenous
Orobanchaceae	*Striga asiatica*	(L.) Kuntze	LC	Indigenous
Orobanchaceae	*Striga forbesii*	Benth.	LC	Indigenous
Orobanchaceae	*Striga gesnerioides*	(Willd.) Vatke	LC	Indigenous
Orobanchaceae	*Striga sp.*			
Loganiaceae	*Strychnos pungens*	Soler.	LC	Indigenous
Fabaceae	*Stylosanthes fruticosa*	(Retz.) Alston	LC	Indigenous

Pallaviciniaceae	*Symphyogyna brasiliensis*	Nees & Mont.		Indigenous
Lamiaceae	*Syncolostemon pretoriae*	(Gurke) D.F.Otieno	LC	Indigenous
Asteraceae	*Tagetes minuta*	L.		Not indigenous; Naturalised; Invasive
Talinaceae	*Talinum sp.*			
Asteraceae	*Tarchonanthus camphoratus*	L.	LC	Indigenous
Asteraceae	*Tarchonanthus parvicapitulatus*	P.P.J.Herman	LC	Indigenous; Endemic
Fabaceae	*Tephrosia capensis var. capensis*	(Jacq.) Pers.	LC	Indigenous
Fabaceae	*Tephrosia multijuga*	R.G.N.Young	LC	Indigenous
Fabaceae	*Tephrosia villosa subsp. ehrenbergiana var. ehrenbergiana*	(L.) Pers.; (Schweinf.) Brummitt	NE	Indigenous
Lamiaceae	*Tetradenia brevispicata*	(N.E.Br.) Codd	LC	Indigenous
Thelypteridaceae	*Thelypteris confluens*	(Thunb.) C.V.Morton	LC	Indigenous
Santalaceae	*Thesium gracilarioides*	A.W.Hill	LC	Indigenous; Endemic
Santalaceae	*Thesium magalismontanum*	Sond.	LC	Indigenous; Endemic
Santalaceae	*Thesium sp.*			
Acanthaceae	*Thunbergia atriplicifolia*	E.Mey. ex Nees	LC	Indigenous; Endemic
Euphorbiaceae	*Tragia incisifolia*	Prain	LC	Indigenous
Euphorbiaceae	*Tragia prionoides*	Radcl.-Sm.	LC	Indigenous
Euphorbiaceae	*Tragia rupestris*	Sond.	LC	Indigenous
Poaceae	*Tragus berteronianus*	Schult.	LC	Indigenous
Cannabaceae	*Trema orientalis*	(L.) Blume	LC	Indigenous
Meliaceae	*Trichilia dregeana*	Sond.	LC	Indigenous
Pottiaceae	*Trichostomum brachydontium*	Bruch		Indigenous
Iridaceae	*Tritonia nelsonii*	Baker	LC	Indigenous; Endemic
Malvaceae	*Triumfetta annua forma piligera*	L.; Sprague & Hutch.	NE	Indigenous
Malvaceae	*Triumfetta pilosa*	Roth	LC	Indigenous
Malvaceae	*Triumfetta rhomboidea var. rhomboidea*	Jacq.	LC	Indigenous
Malvaceae	*Triumfetta sp.*			
Meliaceae	*Turraea floribunda*	Hochst.	LC	Indigenous
Meliaceae	*Turraea obtusifolia*	Hochst.	LC	Indigenous
Meliaceae	*Turraea sp.*			
Fabaceae	*Tylosema esculentum*	(Burch.) A.Schreib.	LC	Indigenous
Poaceae	*Urochloa mosambicensis*	(Hack.) Dandy	LC	Indigenous
Poaceae	*Urochloa panicoides*	P.Beauv.	LC	Indigenous
Asteraceae	*Ursinia nana subsp. leptophylla*	DC.; Prassler	LC	Indigenous; Endemic
Lentibulariaceae	*Utricularia livida*	E.Mey.	LC	Indigenous
Fabaceae	*Vachellia karroo*	(Hayne) Banfi & Galasso	LC	Indigenous
Fabaceae	*Vachellia robusta subsp. robusta*	(Burch.) Kyal. & Boatwr.	LC	Indigenous

Vahliaceae	*Vahlia capensis subsp. vulgaris var. linearis*	(L.f.) Thunb.; Bridson; E.Mey. ex Bridson	NE	Indigenous
Rubiaceae	*Vangueria infausta subsp. infausta*	Burch.	LC	Indigenous
Rubiaceae	*Vangueria parvifolia*	Sond.	LC	Indigenous; Endemic
Rutaceae	*Vepris lanceolata*	(Lam.) G.Don	LC	Indigenous
Santalaceae	*Viscum rotundifolium*	L.f.	LC	Indigenous
Santalaceae	*Viscum sp.*			
Lamiaceae	*Vitex zeyheri*	Sond.	LC	Indigenous; Endemic
Campanulaceae	*Wahlenbergia sp.*			
Malvaceae	*Waltheria indica*	L.	LC	Indigenous
Asteraceae	*Xanthium strumarium*	L.		Not indigenous; Naturalised; Invasive
Convolvulaceae	*Xenostegia tridentata subsp. angustifolia*	(L.) D.F.Austin & Staples; (Jacq.) Lejoly & Lisowski	LC	Indigenous
Velloziaceae	*Xerophyta viscosa*	Baker	LC	Indigenous; Endemic
Olacaceae	*Ximenia caffra var. caffra*	Sond.	LC	Indigenous
Xyridaceae	*Xyris capensis*	Thunb.	LC	Indigenous
Xyridaceae	*Xyris congensis*	Buettner	LC	Indigenous
Scrophulariaceae	*Zaluzianskya elongata*	Hilliard & B.L.Burtt	LC	Indigenous; Endemic
Rutaceae	*Zanthoxylum capense*	(Thunb.) Harv.	LC	Indigenous
Rhamnaceae	*Ziziphus mucronata subsp. mucronata*	Willd.	LC	Indigenous
Rhamnaceae	*Ziziphus zeyheriana*	Sond.	LC	Indigenous
Fabaceae	*Zornia linearis*	E.Mey.	LC	Indigenous; Endemic

7.2 Appendix B – Amphibian species expected to occur in the PAOI

Species	Common Name	Conservation Status	
		Regional (SANBI, 2016)	IUCN (2022)
Amietia delalandii	Delalande's River Frog	LC	LC
Amietia poyntoni	Poynton's River Frog	LC	LC
Breviceps adspersus	Bushveld Rain Frog	LC	LC
Cacosternum boettgeri	Common Caco	LC	LC
Chiromantis xerampelina	Southern Foam Nest Frog	LC	LC
Kassina senegalensis	Bubbling Kassina	LC	LC
Phrynobatrachus natalensis	Snoring Puddle Frog	LC	LC
Phrynomantis bifasciatus	Banded Rubber Frog	LC	LC
Poyntonophrynus fenoulheti	Northern Pygmy Toad	LC	LC
Ptychadena anchietae	Plain Grass Frog	LC	LC
Ptychadena mossambica	Broad-banded Grass Frog	LC	LC
Pyxicephalus adspersus	Giant Bull Frog	LC	LC
Pyxicephalus edulis	African Bull Frog	LC	LC
Schismaderma carens	Red Toad	LC	LC
Sclerophrys capensis	Raucous Toad	LC	LC
Sclerophrys garmani	Olive Toad	LC	LC
Sclerophrys gutturalis	Guttural Toad	LC	LC
Sclerophrys poweri	Power's Toad	LC	LC
Strongylopus fasciatus	Striped Stream Frog	LC	LC
Tomopterna cryptotis	Tremelo Sand Frog	LC	LC
Tomopterna natalensis	Natal Sand Frog	LC	LC
Tomopterna tandyi	Tandy's Sand Frog	LC	LC
Xenopus laevis	Common Platanna	LC	LC

7.3 Appendix C – Reptile species expected to occur in the PAOI

Species	Common Name	Conservation Status	
		Regional (SANBI, 2016)	IUCN (2022)
Acontias gracilicauda	Slender-tailed Legless Skink	LC	LC
Acontias occidentalis	Western Legless Skink	LC	LC
Afroedura nivaria	Drakensberg Rock Gecko	LC	LC
Afrotyphlops bibronii	Bibron's Blind Snake	LC	LC
Agama aculeata	Ground Agama	LC	LC
Agama atra	Southern Rock Agama	LC	LC
Aparallactus capensis	Black-headed Centipede-eater	LC	LC
Atractaspis bibronii	Bibron's Stiletto Snake	LC	LC
Bitis arietans	Puff Adder	LC	LC
Boaedon capensis	Brown House Snake	LC	LC
Causus rhombeatus	Rhombic Night Adder	LC	LC
Chamaeleo dilepis	Common Flap-neck Chameleon	LC	LC
Chondrodactylus turneri	Turner's Gecko	LC	LC
Cordylus jonesii	Jones' Girdled Lizard	LC	LC
Cordylus vittifer	Common Girdled Lizard	LC	LC
Crocodylus niloticus	Nile Crocodile	VU	LC
Crotaphopeltis hotamboeia	Red-lipped Snake	LC	LC
Dasypeltis scabra	Rhombic Egg-eater	LC	LC
Dispholidus typus	Boomslang	LC	LC
Duberria lutrix	Common Slug-eater	LC	LC
Elapsoidea sundevallii media	Sundevall's Garter Snake	LC	LC
Gerrhosaurus flavigularis	Yellow-throated Plated Lizard	LC	LC
Hemachatus haemachatus	Rinkhals	LC	LC
Hemidactylus mabouia	Common Tropical House Gecko	LC	LC
Homoroselaps dorsalis	Striped Harlequin Snake	LC	LC
Kinixys lobatsiana	Lobatse Hinged Tortoise	VU	VU
Lamprophis aurora	Aurora House Snake	LC	LC
Leptotyphlops distanti	Distant's Thread Snake	LC	LC
Leptotyphlops incognitus	Incognito Thread Snake	LC	LC
Leptotyphlops scutifrons	Peter's Thread Snake	LC	LC
Limaformosa capensis	Common File Snake	LC	LC
Lycodonomorphus rufulus	Brown Water Snake	LC	LC
Lycophidion capense	Cape Wolf Snake	LC	LC
Lygodactylus capensis	Common Dwarf Gecko	LC	LC
Meroles squamulosus	Common Desert Lizard	LC	LC
Mochlus sundevallii	Sundevall's Writhing Skink	LC	LC
Naja annulifera	Snouted Cobra	LC	LC

Naja mossambica	Mozambique Spitting Cobra	LC	LC
Nucras holubi	Holub's Sandveld Lizard	LC	LC
Nucras intertexta	Spotted Sandveld Lizard	LC	LC
Nucras lalandii	Delalande's Sandveld Lizard	LC	LC
Pachydactylus affinis	Transvaal Gecko	LC	LC
Pachydactylus capensis	Cape Gecko	LC	LC
Panaspis wahlbergii	Wahlberg's Snake-eyed Skink	LC	LC
Pedioplanis lineoocellata lineoocellata	Spotted Sand Lizard	LC	LC
Pelomedusa galeata	South African Marsh Terrapin	LC	LC
Pelusios sinuatus	Serrated Hinged Terrapin	LC	Not listed
Philothamnus hoplogaster	Southeastern Green Snake	LC	LC
Philothamnus occidentalis	South African Green Snake	LC	LC
Philothamnus semivariegatus	Spotted Bush Snake	LC	LC
Prosymna bivittata	Two-striped Shovel-snout	LC	LC
Prosymna sundevallii	Sundevall's Shovel-snout	LC	LC
Psammobates oculifer	Kalahari Tent Tortoise	LC	Not listed
Psammophis angolensis	Dwarf Sand Snake	LC	LC
Psammophis brevirostris	Short-snouted Grass Snake	LC	LC
Psammophis subtaeniatus	Western Yellow-bellied Sand Snake	LC	LC
Psammophylax rhombeatus	Spotted Skaapsteker	LC	LC
Psammophylax tritaeniatus	Striped Skaapsteker	LC	LC
Pseudaspis cana	Mole Snake	LC	LC
Python natalensis	Southern African Python	LC	LC
Rhinotyphlops lalandei	Delalande's Beaked Blind Snake	LC	LC
Stigmochelys pardalis	Leopard Tortoise	LC	LC
Telescopus semiannulatus	Common Tiger Snake	LC	LC
Thelotornis capensis	Twig Snake	LC	LC
Trachylepis capensis	Cape Skink	LC	LC
Trachylepis damarana	Damara Variable Skink	LC	LC
Trachylepis laevigata	Striped-neck Variable Skink	DD	DD
Trachylepis punctatissima	Speckled Rock Skink	LC	LC
Trachylepis varia	Variable Skink	LC	LC
Varanus albigularis	Rock Monitor	LC	LC
Varanus niloticus	Water Monitor	LC	LC

7.4 Appendix D – Mammal species expected to occur within the PAOI

Species	Common Name	Conservation Status	
		Regional (SANBI, 2016)	IUCN (2022)
Aethomys ineptus	Tete Veld Rat	LC	LC
Aethomys namaquensis	Namaqua Rock Rat	LC	LC
Aonyx capensis	Cape Clawless Otter	NT	NT
Atelerix frontalis	South African Hedgehog	NT	LC
Atilax paludinosus	Marsh Mongoose	LC	LC
Canis mesomelas	Black-backed Jackal	LC	LC
Caracal caracal	Caracal	LC	LC
Chlorocebus pygerythrus	Vervet Monkey	LC	LC
Civettictis civetta	African Civet	LC	LC
Cloeotis percivali	African Trident Bat	EN	LC
Crocidura cyanea	Reddish-Gray Musk Shrew	LC	LC
Crocidura fuscomurina	Bicolored Musk Shrew	LC	LC
Crocidura hirta	Lesser Red Musk Shrew	LC	LC
Crocidura mariquensis	Swamp Musk Shrew	NT	LC
Crocidura silacea	Lesser Gray-Brown Musk Shrew	LC	LC
Cryptomys hottentotus	African Mole Rat	Not listed	LC
Cynictis penicillata	Yellow Mongoose	LC	LC
Dendromus melanotis	Gray African Climbing Mouse	LC	LC
Desmodillus auricularis	Cape Short-eared Gerbil	LC	LC
Eidolon helvum	African Straw-colored Fruit Bat	LC	NT
Elephantulus brachyrhynchus	Short-snouted Elephant Shrew	LC	LC
Elephantulus myurus	Eastern Rock Sengi	LC	LC
Epomophorus wahlbergi	Wahlberg's Epauletted Fruit Bat	LC	LC
Eptesicus hottentotus	Long-tailed Serotine Bat	LC	LC
Felis nigripes	Black-footed Cat	VU	VU
Felis silvestris	African Wild Cat	Not listed	LC
Galago moholi	South African Galago	LC	LC
Genetta genetta	Common Genet	Not listed	LC
Gerbilliscus brantsii	Highveld Gerbil	LC	LC
Gerbilliscus leucogaster	Bushveld Gerbil	LC	LC
Graphiurus microtis	Small-eared Dormouse	LC	LC
Graphiurus platyops	Rock Dormouse	LC	LC
Herpestes sanguineus	Slender Mongoose	LC	LC
Hipposideros caffer	Sundevall's Leaf-nosed Bat	LC	LC
Hydrictis maculicollis	Spotted-necked Otter	VU	NT
Hystrix africaeaustralis	Cape Porcupine	LC	LC
Ichneumia albicauda	White-tailed Mongoose	LC	LC

Ictonyx striatus	Striped Polecat	LC	LC
Kerivoula lanosa	Lesser Woolly Bat	LC	LC
Lemniscomys rosalia	Single-striped Grass Mouse	LC	LC
Leptailurus serval	Serval	LC	LC
Lepus saxatilis	Cape Scrub Hare	LC	LC
Lepus victoriae	African Savanna Hare	LC	LC
Mastomys coucha	Multimammate Mouse	LC	LC
Mellivora capensis	Honey Badger	LC	LC
Mungos mungo	Banded Mongoose	LC	LC
Mus indutus	Desert Pygmy Mouse	LC	LC
Myotis tricolor	Cape Hairy Bat	LC	LC
Mystromys albicaudatus	White-tailed Rat	VU	EN
Neoromicia capensis	Cape Bat	LC	LC
Neoromicia zuluensis	Zulu Bat	LC	LC
Nycteris thebaica	Cape Long-eared Bat	LC	LC
Oreotragus oreotragus	Klipspringer	LC	LC
Orycteropus afer	Aardvark	LC	LC
Otomys angoniensis	Angoni Vlei Rat	LC	LC
Otomys irroratus	Southern African Vlei Rat	LC	LC
Panthera pardus	Leopard	Not listed	VU
Papio ursinus	Chacma Baboon	LC	LC
Parahyaena brunnea	Brown Hyaena	NT	NT
Paraxerus cepapi	Smith's Bush Squirrel	LC	LC
Pedetes capensis	Springhare	LC	LC
Pelea capreolus	Grey Rhebok	NT	LC
Phacochoerus africanus	Common Warthog	LC	LC
Poecilogale albinucha	African Striped Weasel	LC	LC
Procavia capensis	Rock Hyrax	LC	LC
Proteles cristata	Aardwolf	LC	LC
Raphicerus campestris	Steenbok	LC	LC
Rattus rattus	House Rat	Not listed	LC
Redunca arundinum	Southern Reedbuck	LC	LC
Redunca fulvorufula	Mountain Reedbuck	EN	LC
Rhabdomys pumilio	Four-striped Grass Mouse	LC	LC
Rhinolophus darlingi	Darling's Horseshoe Bat	LC	LC
Rhinolophus simulator	Bushveld Horseshoe Bat	LC	LC
Saccostomus campestris	Pouched Mouse	LC	LC
Sauromys petrophilus	Flat-headed Free-tailed Bat	LC	LC
Scotophilus dinganii	Yellow House Bat	LC	LC
Steatomys krebsii	Kreb's Fat Mouse	LC	LC

Steatomys pratensis	Fat Mouse	LC	LC
Suncus lixus	Greater Dwarf Shrew	LC	LC
Suncus varilla	Lesser Dwarf Shrew	LC	LC
Suricata suricatta	Meerkat	LC	LC
Sylvicapra grimmia	Common Duiker	LC	LC
Tadarida aegyptiaca	Egyptian Free-tailed Bat	LC	LC
Taphozous mauritianus	Taphozous Bat	LC	LC
Thallomys paedulcus	Acacia Rat	LC	LC
Vulpes chama	Cape Fox	LC	LC
Xerus inauris	South African Ground Squirrel	LC	LC