



TERRESTRIAL BIODIVERSITY ASSESSMENT FOR THE PROPOSED HARMONY GOLD MPONENG LOWER COMPARTMENT TAILINGS STORAGE FACILITY

**Merafong Local Municipality, West Rand District
Municipality, Gauteng Province, South Africa**

7/4/2025

Prepared by:

The Biodiversity Company

Cell: +27 81 319 1225

Fax: +27 86 527 1965

info@thebiodiversitycompany.com

www.thebiodiversitycompany.com




Report Name	TERRESTRIAL BIODIVERSITY ASSESSMENT FOR THE PROPOSED HARMONY GOLD MPONENG LOWER COMPARTMENT TAILINGS STORAGE FACILITY	
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Environmental Assessment Practitioner		
Report Writer	Carami Burger (Pr. Nat. Sci. 121757)	
Reviewer	Martinus Erasmus (SACNASP 118630)	
Declaration	<p>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, Amended. 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.</p>	

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1 Introduction

1.1 Background

The biodiversity company was appointed to undertake a terrestrial biodiversity assessment for the proposed Mponeng Lower Compartment Tailings Storage Facility (TSF) project. The proposed project involves recommencing deposition on the Mponeng Lower Compartment TSF (hereafter referred to as Mponeng Lower Compartment TSF). The Mponeng Lower Compartment TSF is currently not in operation and is used as a holding dam and partially as a landfill facility. Furthermore, the Mponeng Lower Compartment TSF is situated in close proximity to Carletonville, Merafong Local Municipality, West Rand District Municipality, Gauteng Province. A 50m buffer has been applied to the area provided and is referred to as the Project Area of Influence (PAOI). The regional context of the PAOI can be seen in Figure 1-1. The proposed PAOI can be seen illustrated in Figure 1-2.

To determine the area's baseline ecological state and present a detailed description of the receiving environment, both a desktop assessment and field survey (3 July 2025) were conducted. Furthermore, the desktop assessment and field survey both involved detecting, identifying and describing any locally relevant sensitive receptors and habitats. The manner in which the proposed development may affect these sensitive features was also investigated.

This assessment was conducted in accordance with the amendments to the Environmental Impact Assessment Regulations, 2014 (GNR 326, 7 April 2017) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The approach has taken cognisance of the recently published Government Notices (GN) 320 (20 March 2020) and GN 1150 (30 October 2020) in terms of NEMA, dated 20 March and 30 October 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" (Reporting Criteria). The National Web-based Environmental Screening Tool has characterised the terrestrial theme sensitivity of the PAOI as:

- Terrestrial Biodiversity Theme sensitivity is Very High;
- Plant Species Theme sensitivity is Medium; and
- Animal Species Theme sensitivity is Medium.

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. 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 project.

Mponeng Lower Compartment TSF

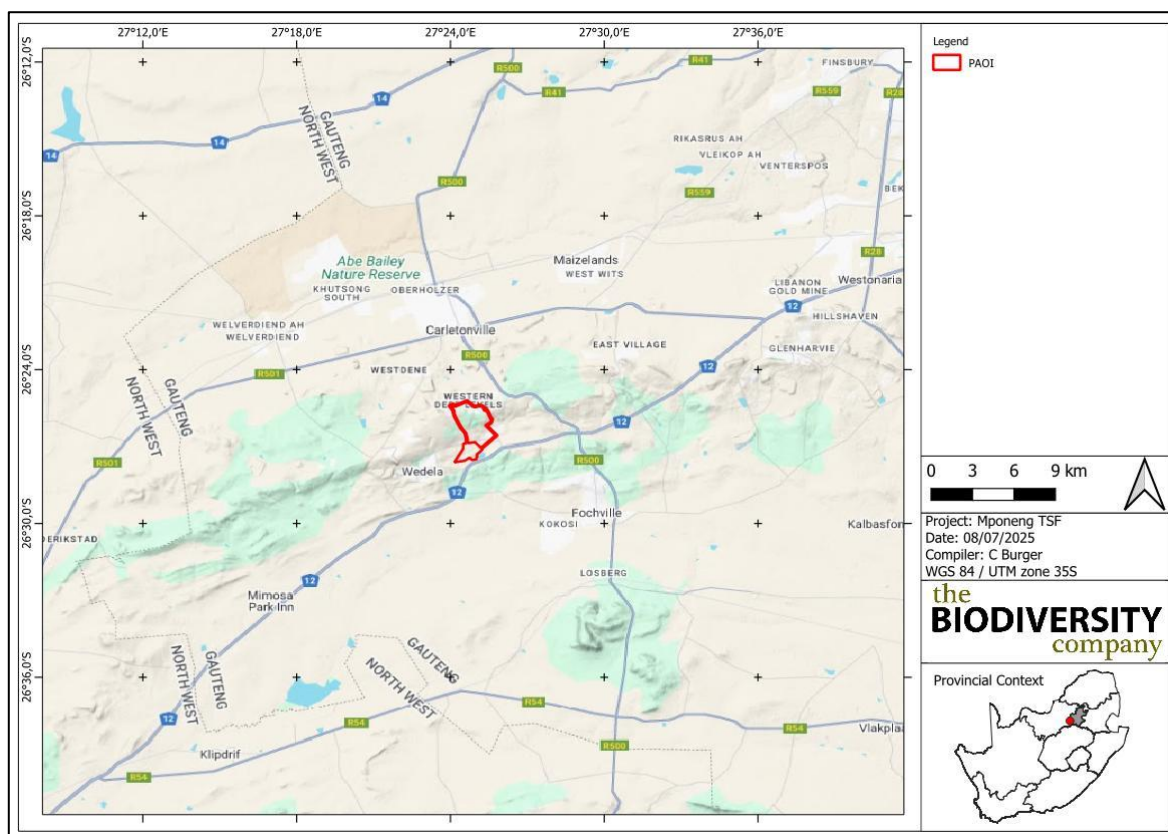


Figure 1-1 Map illustrating the regional context of the PAOI.

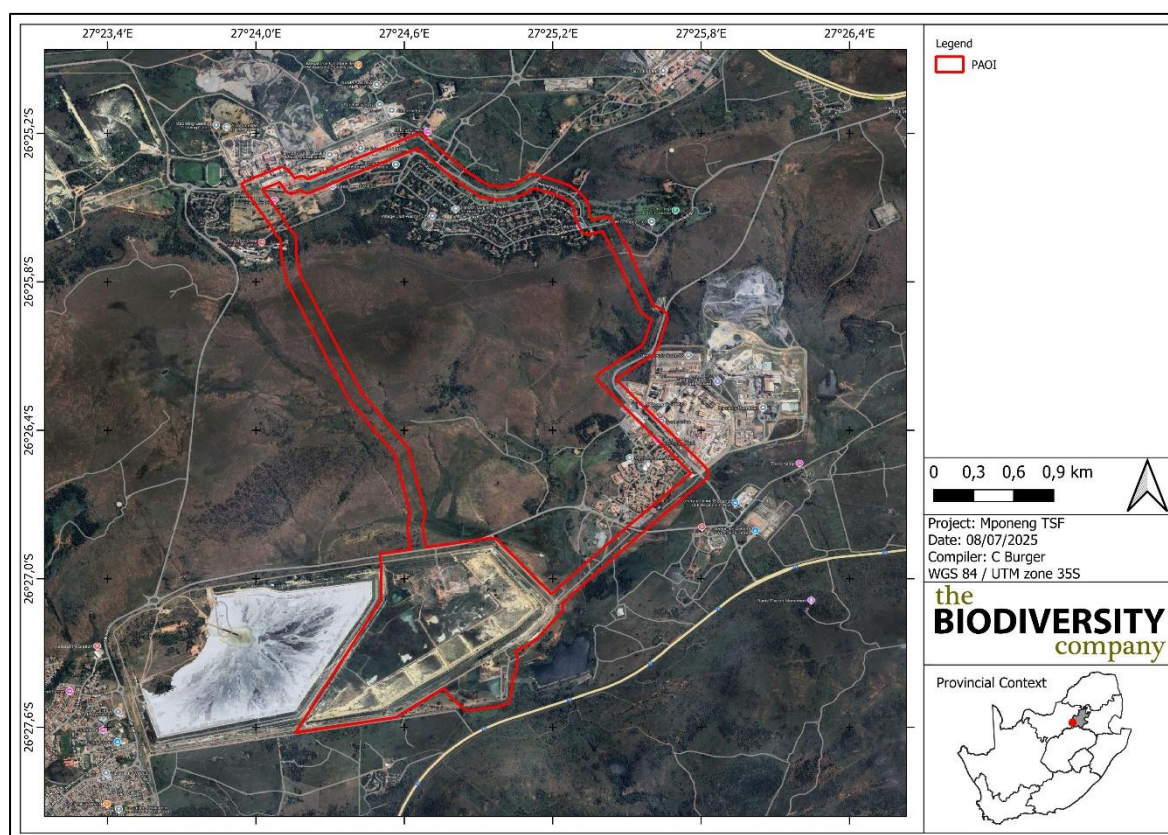


Figure 1-2 Map illustrating the PAOI.

1.2 Project Description

Harmony Gold Mining Company Limited (hereafter referred to as the applicant) has appointed Environmental Impact Management Services (Pty) Ltd (EIMS) as the Environmental Assessment Practitioner (EAP) to undertake the necessary environmental authorisation and associated consultation processes. EIMS will compile and submit the required documentation in support of applications for:

- Environmental Authorisation (EA) in accordance with the NEMA- Listed activity/ies:
 - GNR983 Listing Notice 1, Activities 10, 12, 19, 21D, 21F, 27, 31, and 46.
 - GNR984 Listing Notice 2, Activity 6.
 - GNR985 Listing Notice 3, Activities 12, 14, 23, and 26.
- Waste Management Licence in accordance with the requirements of the National Environmental Management: Waste Act- NEM:WA (Act 59 of 2008) - Listed activity/ies:
 - GNR921 Categories A14, B7 and B10.
- Water Use Licence (WUL) in accordance with the National Water Act – NWA (Act 36 of 1998) - Listed activity/ies:
 - Section 21 (c), (g) and (i).

Additional listed activities and/or water uses may be identified during the process.

The applicant owns and operates a number of Gold Mines and Plants in the West Wits region in the Gauteng Province. The Savuka Plant currently deposits tailings onto the Savuka 5a, 5b, 7a & 7b Tailings Storage Facilities (TSFs). However, these facilities are approaching their final and approved height, and the current planned Life of Mine (LOM) for the West Wits region exceeds the available deposition capacity of these TSFs. Accordingly, the applicant is undertaking a feasibility assessment to recommence deposition on the Mponeng Lower Compartment TSF.

The Mponeng Lower Compartment TSF is located at 26°27'11.18"S; 27°24'43.88"E. Mponeng Lower Compartment TSF is an existing TSF, however, the Mponeng Lower Compartment TSF is no longer in operation and is currently utilised as a Holding Dam, and a portion of it is used as an authorised Landfill Facility. In order to redeposit on the Mponeng Lower Compartment TSF, from the Savuka Plant, slurry pipelines will need to be constructed from the Savuka Plant to the TSF. The proposed slurry and return water pipes extend from the south of Savuka Plant at starting point 26°25'24.95"S; 27°23'58.94"E, extending southwards, parallel to each other until reaching the northern extent of Mponeng Lower Compartment TSF where they split. Thereafter, the slurry pipeline extends to west before connecting to Mponeng Lower Compartment TSF while the return water pipeline extends east then south around the TSF to the return water dam. There is an alternative slurry and return water pipeline route which extends to the east through Western Deep Levels then south along Mponeng Gold Mine before heading to the west where it connects to Mponeng Lower Compartment TSF.

The proposed layout can be seen in Figure 1-3 below.

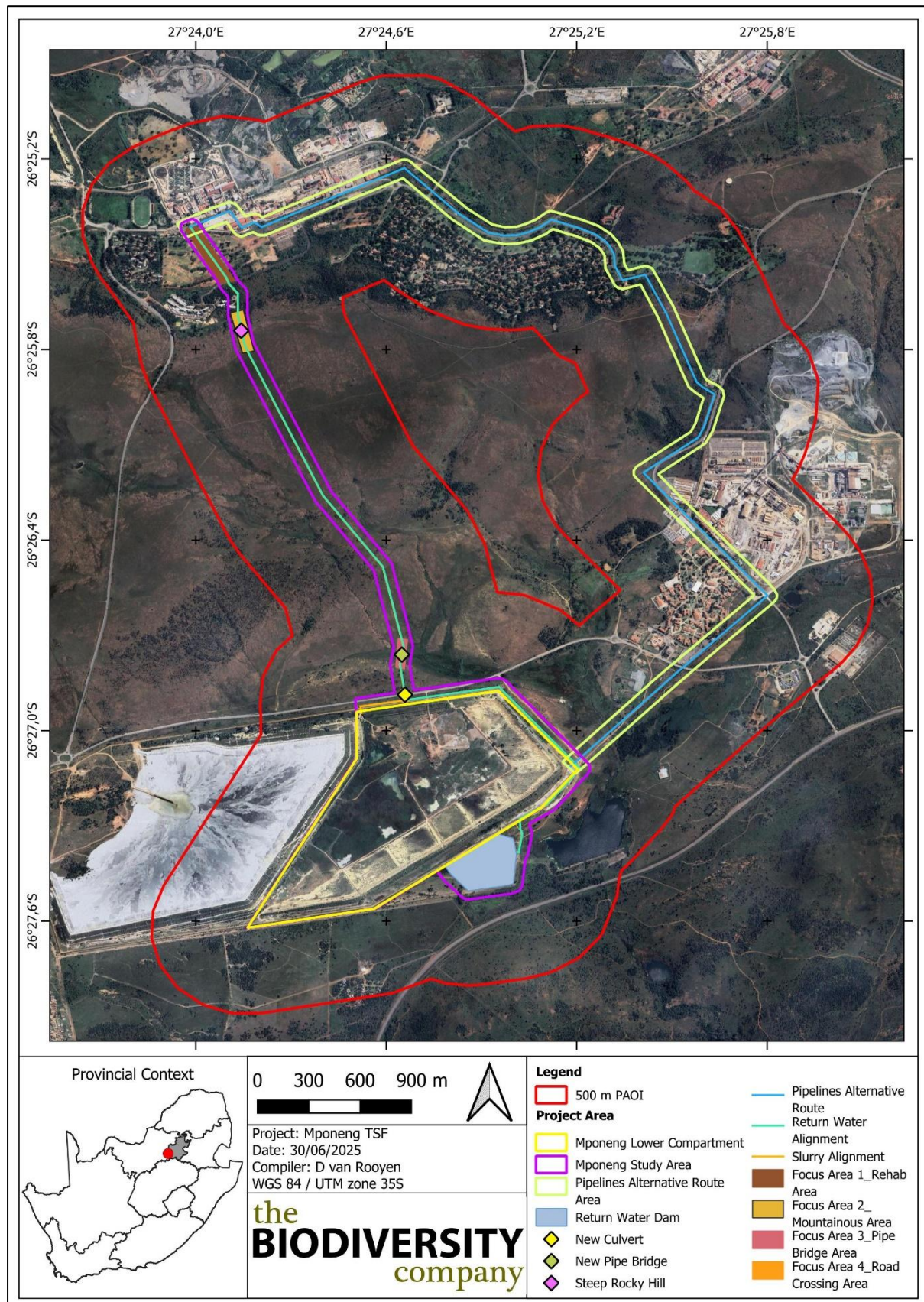


Figure 1-3 **Proposed layout of the Project**

1.3 Scope of Work

The aim of the biodiversity assessment was to provide information to guide the risk of the proposed activity to the current state of the associated ecosystems within the development area. This was achieved through the following:

- Desktop assessment to identify the relevant ecologically important geographical features within the PAOI and surrounding landscape;
- Desktop assessment to compile an expected species list and identify possible Species of Conservation Concern (SCC) that occur within the PAOI and surrounding landscape;
- Field survey to record flora and fauna species, especially SCC;
- Determination of the Site Ecological Importance (SEI), also commonly referred to as sensitivity;
- A biodiversity impact assessment; and
- The prescription of mitigation measures for identified risks, including assigning buffer areas, where necessary.

1.4 Assumptions and Limitations

The following assumptions and limitations are applicable for this assessment:

- The first draft of this report is based solely on desktop information and will be updated with relevant data following the completion of fieldwork for the remainder of the report;
- It is assumed that all information received from the client/developer is accurate;
- All datasets accessed and utilised for this assessment are considered to be representative of the most recent and suitable data for the intended purposes;
- The assessment area (PAOI) was based on the footprint areas as provided by the client, and any alterations to the area and/or missing GIS information pertaining to the assessment area would have affected the area surveyed and hence the results of this assessment;
- This assessment does not consider temporal trends (note that the data collected is, however, considered sufficient to derive a meaningful baseline);
- The area was only surveyed during a single site visit (dry season) and therefore, this assessment does not consider temporal trends (note that the data collected is considered sufficient to derive a meaningful baseline);
 - The flora identification was limited due to the lack of aboveground plant parts used to determine species, especially in regard to bulbous plants, the vegetation was dry, and most plants had already lost the green flush;
 - Fauna movement and presence was limited due to the cold winter weather, thus reducing species observations, especially herpetofauna;
- Whilst every effort was made to cover as much of the PAOI as possible, it is possible that some plant and animal species that are present within the PAOI were not recorded during the field investigations. However, it is the opinion of the specialist that an accurate representative sample of the ecological components considered within this assessment was collected; and

- The GPS used in the assessment has an accuracy of 5 m and consequently any spatial features may be offset by up to 5 m.

1.5 Key Legislative Requirements

The legislation, policies and guidelines listed below in Table 1-1 are applicable to the current 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

Region	Legislation / Guideline	Comment
National	NEMA	Environmental Impact Assessment Regulations. 2014 (GNR 326, 7 April 2017), Appendix 6 requirements
	The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA), Threatened or Protected Species Regulations	The protection of species and ecosystems that warrant protection
	Assessment Protocol (March 2020)	The minimum criteria for reporting.
	Assessment Protocol (October 2020)	Protocol for the specialist assessment and minimum report content requirements.
	NEMWA;	The regulation of waste management to protect the environment.
	NWA	The regulation of water uses.
	GN 1003 of GG 43726 of 18 Sept 2020	The regulation and management of alien invasive species.
	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA)	To provide for control over the utilisation of the natural agricultural resources, including the vegetation and the combating of weeds and invader plants.
Provincial	Gauteng Provincial Environmental Management Framework, 2014	
	Transvaal Nature Conservation Ordinance No. 12 of 1983	To provide for the management and conservation of the Province's biophysical environment and protected areas.
	Gauteng Conservation Plan (2024)	To inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management.
	Gauteng Nature Conservation Bill, 2014 (Draft)	
	Gauteng Department of Agriculture and Rural Development Ridges Guideline	

2 Results & Discussion

2.1 Desktop Assessment

2.1.1 Ecologically Important Landscape Features

The relevance of the proposed development to ecologically important landscape features are summarised in Table 2-1.

Table 2-1 *Summary of relevance of the proposed project to ecologically important landscape features*

Desktop Information Considered	Relevance	Reasoning	Section
Ecosystem Threat Status (RLE 2021)	Relevant	Overlaps with a 'Least Concern' ecosystem.	2.1.1.1
Ecosystem Protection Level (NBA, 2018)	Relevant	Overlaps with a 'Poorly Protected' Ecosystem.	2.1.1.2
Provincial Conservation Plan (2024)	Relevant	Overlaps with Critical Biodiversity Area (CBA) 2, and Ecological Support Area (ESA) 1.	2.1.1.3
Gauteng Ridges (2019)	Relevant	The PAOI overlaps with a Class 2 ridge and is located adjacent to two Class 1 ridges.	2.1.1.4
Key Biodiversity Areas (KBA)	Irrelevant	Not located within 10 km of any KBA.	-
South African Protected and Conservation Areas Databases (2024) (SAPAD and SACAD)	Relevant	Not within range of any relevant SAPAD or SACAD areas. The Gauteng C-Plan does however show a Protected Area to the east of the PAOI.	-
National Protected Areas Expansion Strategy (NPAES)	Relevant	The PAOI overlaps with portions of NPAES areas.	2.1.1.5
Strategic Water Source Areas (SWSA)	Irrelevant	Does not overlap with any relevant areas.	-
South African Inventory of Inland Aquatic Ecosystems (SAIIAE)	Relevant	The PAOI overlaps with CR SAIIAE wetlands and a CR/EN River.	2.1.1.6
National Freshwater Priority Area (NFEPA)	Relevant	The PAOI overlaps with unclassified NFEPA wetlands and a Class D: Largely Modified and a Class C: Moderately Modified River.	2.1.1.7
Mining and Biodiversity Guidelines	Relevant	The PAOI overlaps with areas rated as Moderate, High and Highest Biodiversity Importance with the correlating risks for mining.	2.1.1.8

2.1.1.1 Red List of Ecosystems

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) 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 Red List of Ecosystems dataset (Skowno & Monyeki, 2021) the proposed PAOI overlaps with a LC ecosystem (Figure 2-1).

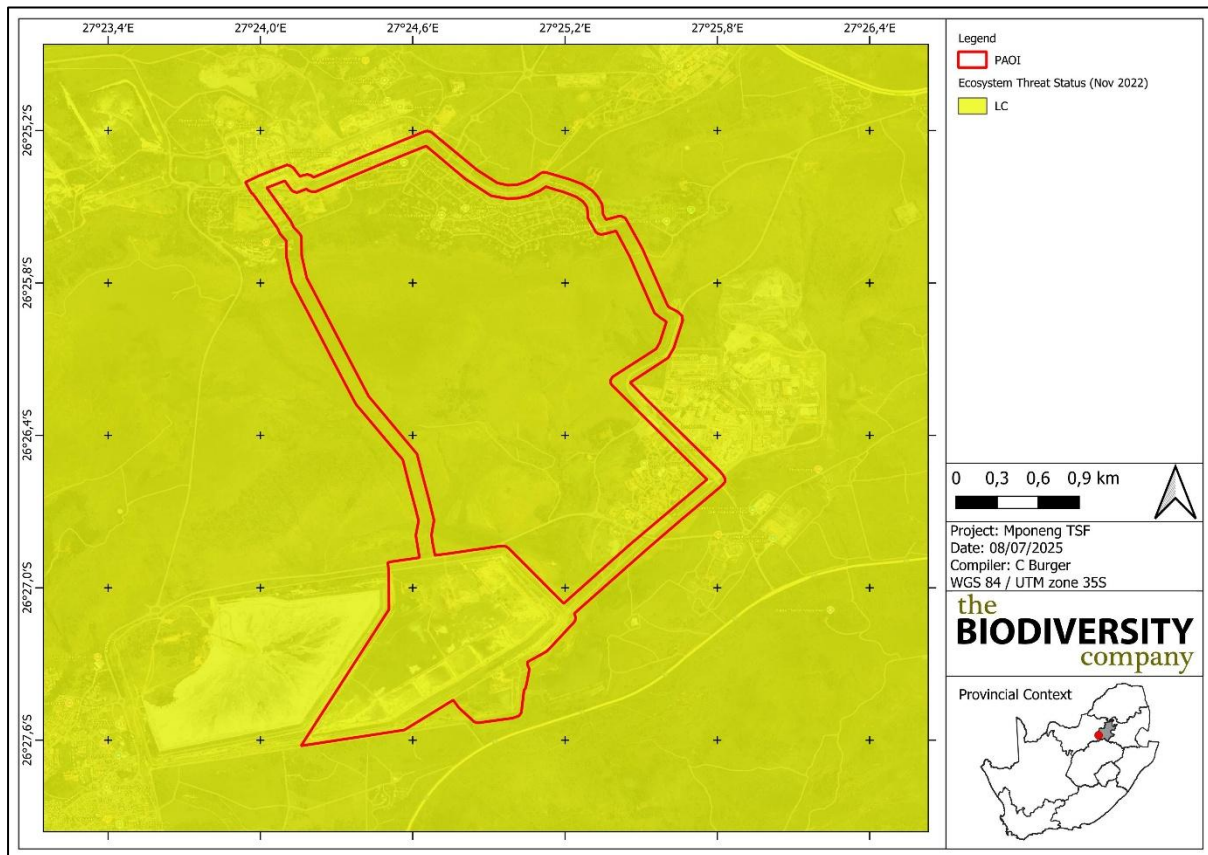


Figure 2-1 Map illustrating the ecosystem threat status associated with the PAOI.

2.1.1.2 Ecosystem Protection Level

Ecosystem protection level 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. Not Protected, PP or MP ecosystem types are collectively referred to as under-protected ecosystems. The PAOI overlaps with a PP ecosystem (Figure 2-2).

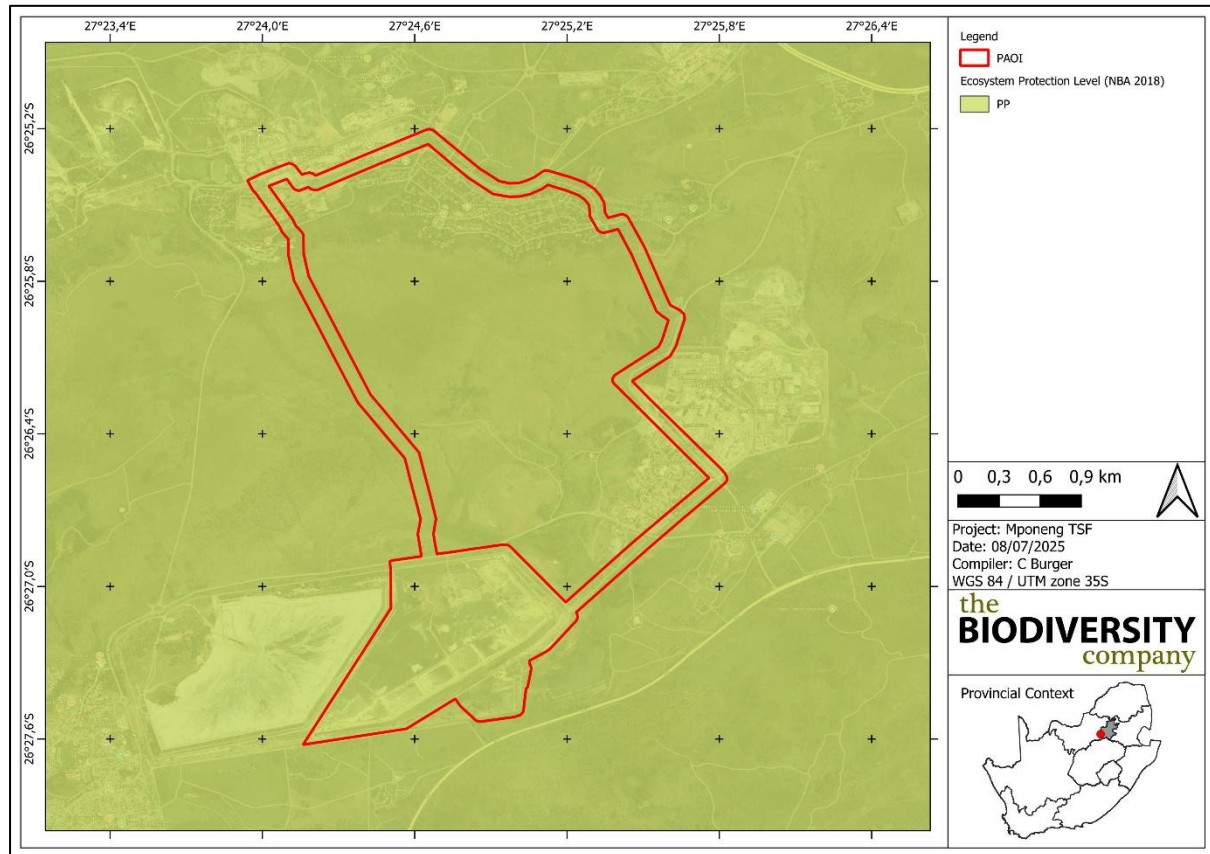


Figure 2-2 Map illustrating the ecosystem protection level associated with the PAOI.

2.1.1.3 Provincial Conservation Plan

The Gauteng Conservation Plan (C-Plan) Version 4 (GDE, 2024), developed using a systematic conservation planning approach, is the standard for conservation planning in South Africa. It is designed for use at a 1:50,000 scale to integrate biodiversity into land use planning and decision-making. It identifies biodiversity priority areas, including Critical Biodiversity Areas and Ecological Support Areas.

Figure 2-3 shows the PAOI superimposed on the Terrestrial CBA maps. The PAOI overlaps with Critical Biodiversity Area (CBA) 2, and Ecological Support Area (ESA) 1. It also shows that a Protected Area (PA) is located to the east of the PAOI.

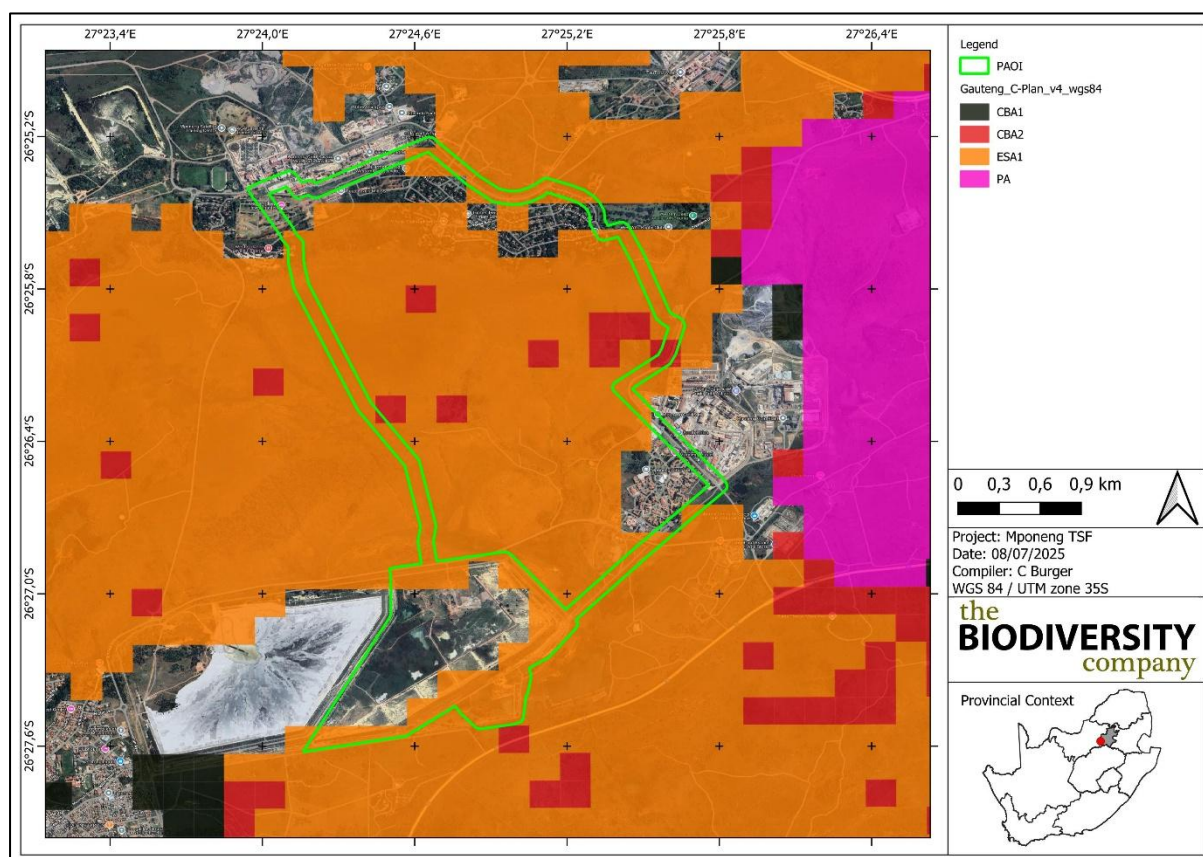


Figure 2-3 Map illustrating the PAOI in relation to the Gauteng Conservation Plan.

2.1.1.4 Gauteng Ridges

The quartzite ridges of Gauteng are one of the most important natural assets in this northern province of South Africa. This is because these ridges, and the areas immediately surrounding them, provide unique habitat for a wide variety of fauna and flora, some of which are Red-Listed, rare or endemic species, or in the case of certain plant species, are found nowhere else in South Africa or around the world.

According to the Gauteng Ridges spatial dataset, parts of the PAOI overlap with a Class 2 ridge and is located adjacent to two Class 1 ridges (Figure 2-4).

The 2019 Ridges Guideline has defined general guidelines that must be followed with regards to the amount of development that should be permitted on different ridges according to their class.

- Class 1 Ridges: Only low impact activities with an ecological footprint of 5% or less in the 200 m buffer zone of the ridge will be supported and no development will be permitted in the ridge itself;
- Class 2 Ridges: Development activities and uses that have a high environmental impact on a Class 2 ridge will not be permitted. Low impact development activities, such as tourism facilities, which comprise of an ecological footprint of 5% or less of the property may be supported (the ecological footprint includes all areas directly impacted on by a development activity, including all paved surfaces, landscaping, property access and service provision). Low impact development activities on a ridge will not be supported where it is feasible to undertake the development on a portion of the property abutting the ridge.

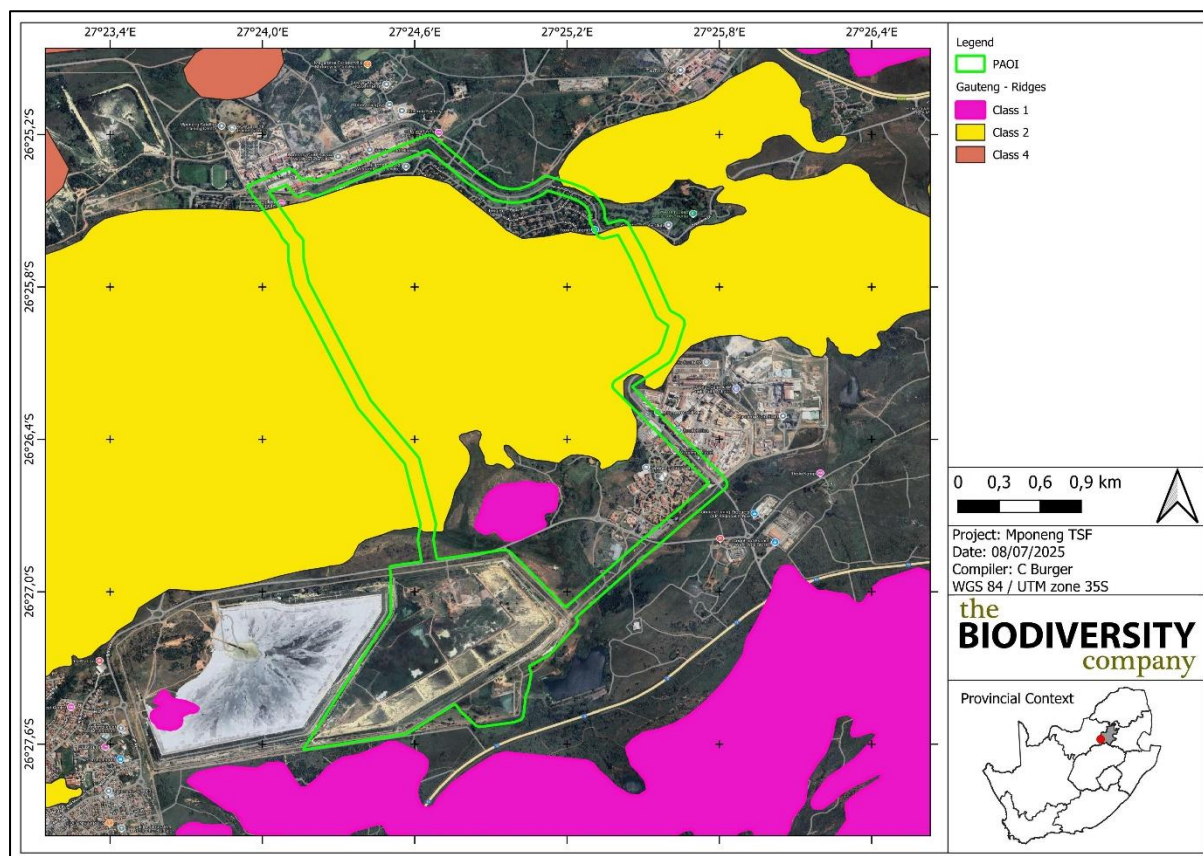


Figure 2-4 Map illustrating the PAOI in relation to the Gauteng Ridges

2.1.1.5 National Protected Areas Expansion Strategy

National Protected Area Expansion Strategy 2018 (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, 2018). The PAOI overlaps with portions of NPAES areas (Figure 2-5).

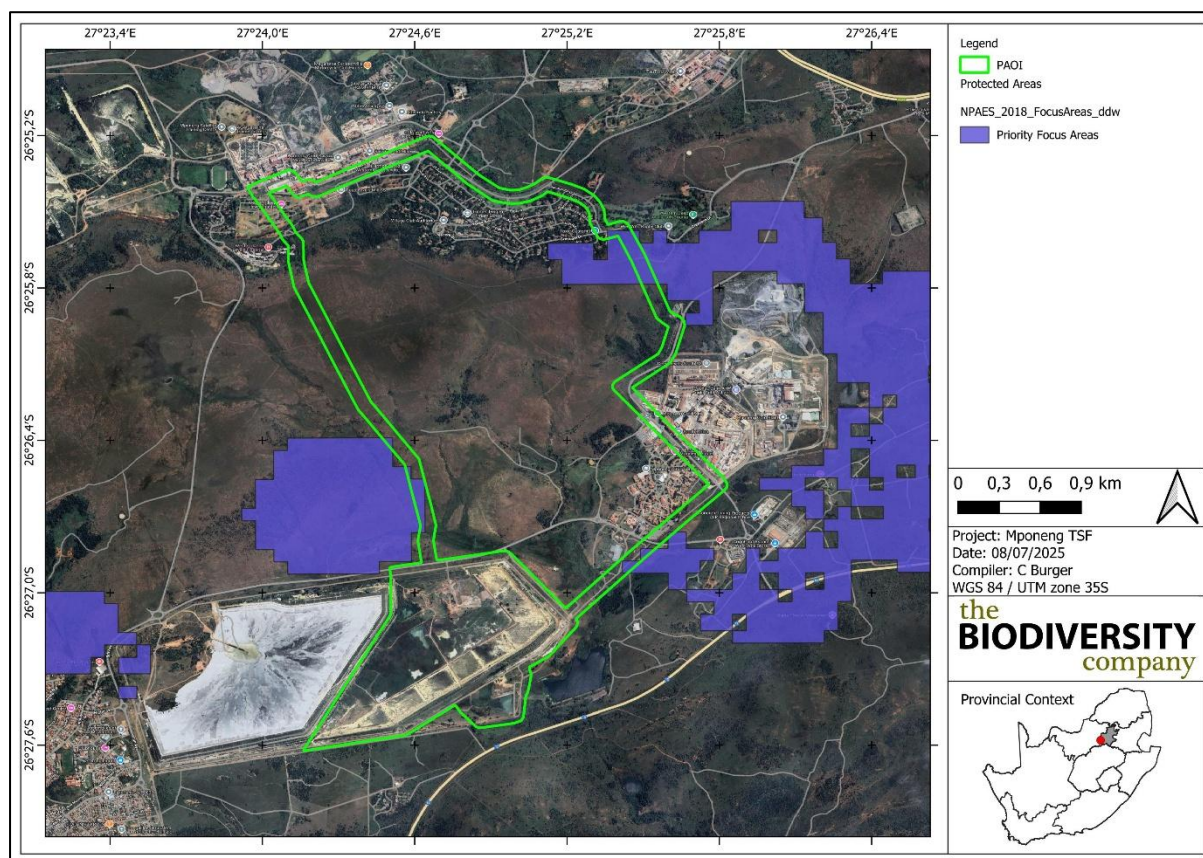


Figure 2-5 The PAOI in relation to the National Protected Area Expansion Strategy

2.1.1.6 South African Inventory of Inland Aquatic Ecosystems

The South African Inventory of Inland Aquatic Ecosystems (SAIAE) was released with the NBA in 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 CR, EN, VU or LT, with CR, EN and VU ecosystem types collectively referred to as 'threatened' (Van Deventer *et al.*, 2019; Skowno *et al.*, 2019). The PAOI overlap with CR SAIAE wetlands and a CR/EN River (Figure 2-6).

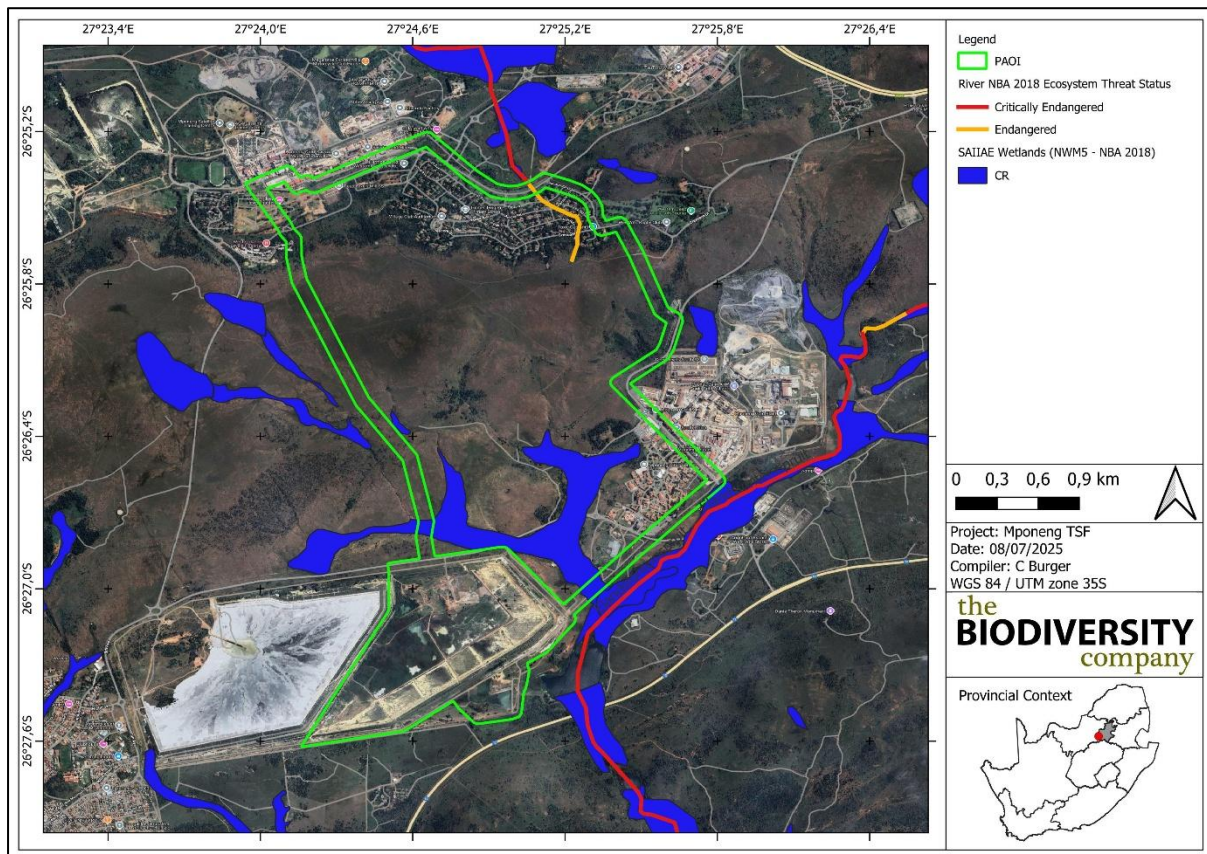


Figure 2-6 Map illustrating the SAIIE threat status of rivers and wetland systems of the PAOI

2.1.1.7 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). The PAOI overlaps with unclassified NFEPA wetlands and a Class D: Largely Modified and a Class C: Moderately Modified River (Figure 2-7).

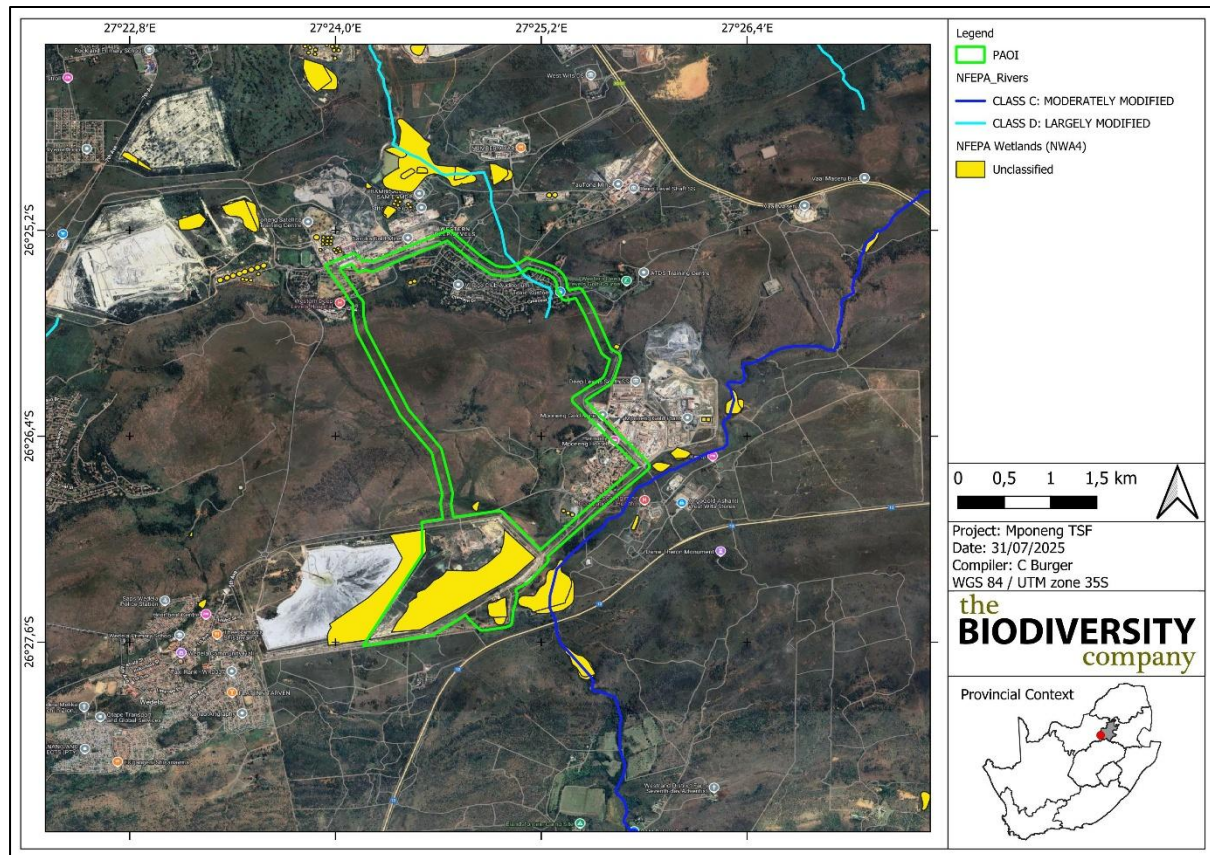


Figure 2-7 Map illustrating the PAOI in relation to the National Freshwater Ecosystem Priority Area dataset.

2.1.1.8 Mining and Biodiversity Guidelines (2013)

According to the Mining Guide dataset for Biodiversity Risk & Importance (SANBI, 2013), the PAOI is overlapped by the following areas (Figure 2-8):

- Moderate Biodiversity Importance - Classified as Moderate Risk for Mining;
- High Biodiversity Importance - Classified as High risk for Mining; and
- Highest Biodiversity Importance - Classified as 'Highest Risk for Mining'.

See Appendix A, Section 5.1.1.2 for a full breakdown of these guidelines.

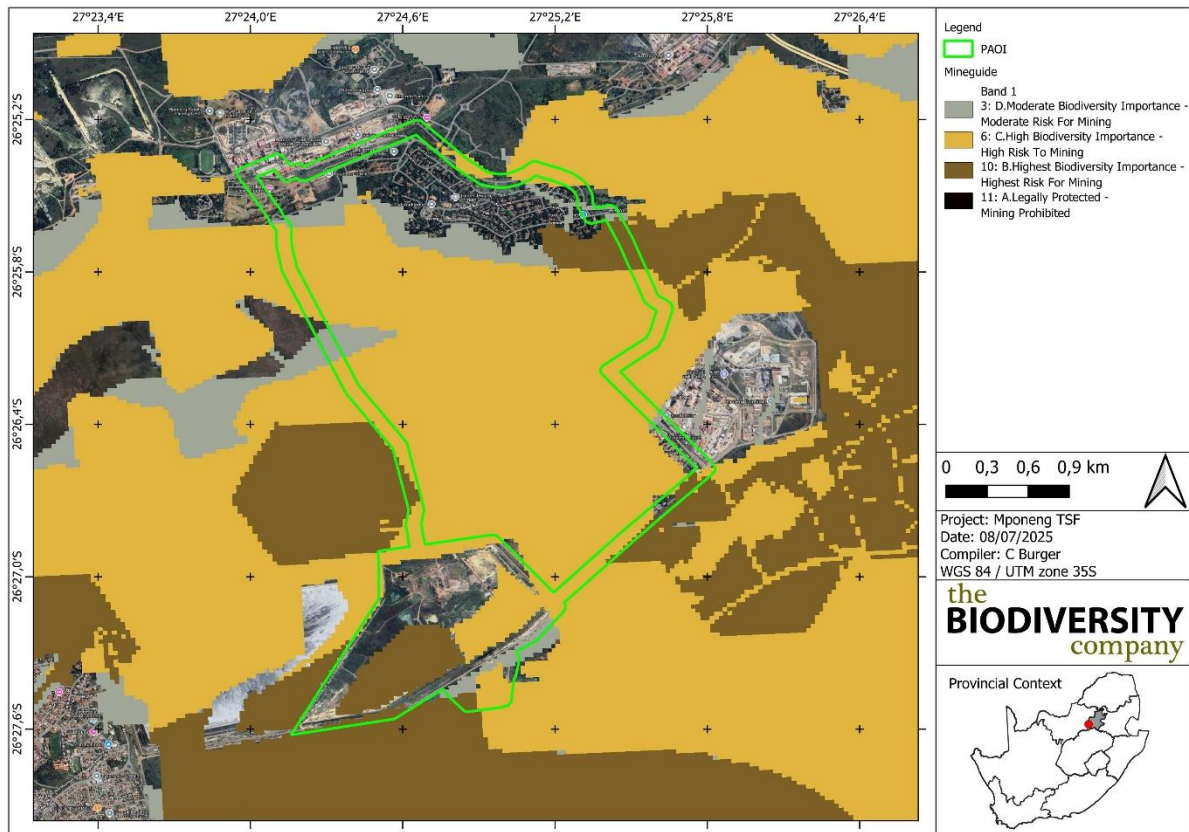


Figure 2-8 Map illustrating the Mining Biodiversity Importance/Risk.

2.1.2 Flora Assessment

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

2.1.2.1 Vegetation Type

The PAOI is situated within the Savanna biome.

The Savanna biome 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
- b) (Sub) tropical thermal regime with no or usually low incidence of frost (Mucina & Rutherford, 2006).

Most savanna vegetation communities are characterised by a herbaceous layer dominated by grasses and a discontinuous to sometimes very open tree layer (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 layers, over-topped by a discontinuous, but distinct woody plant layer. 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 overlaps with Gauteng Shale Mountain Bushveld vegetation types (Figure 2-9).

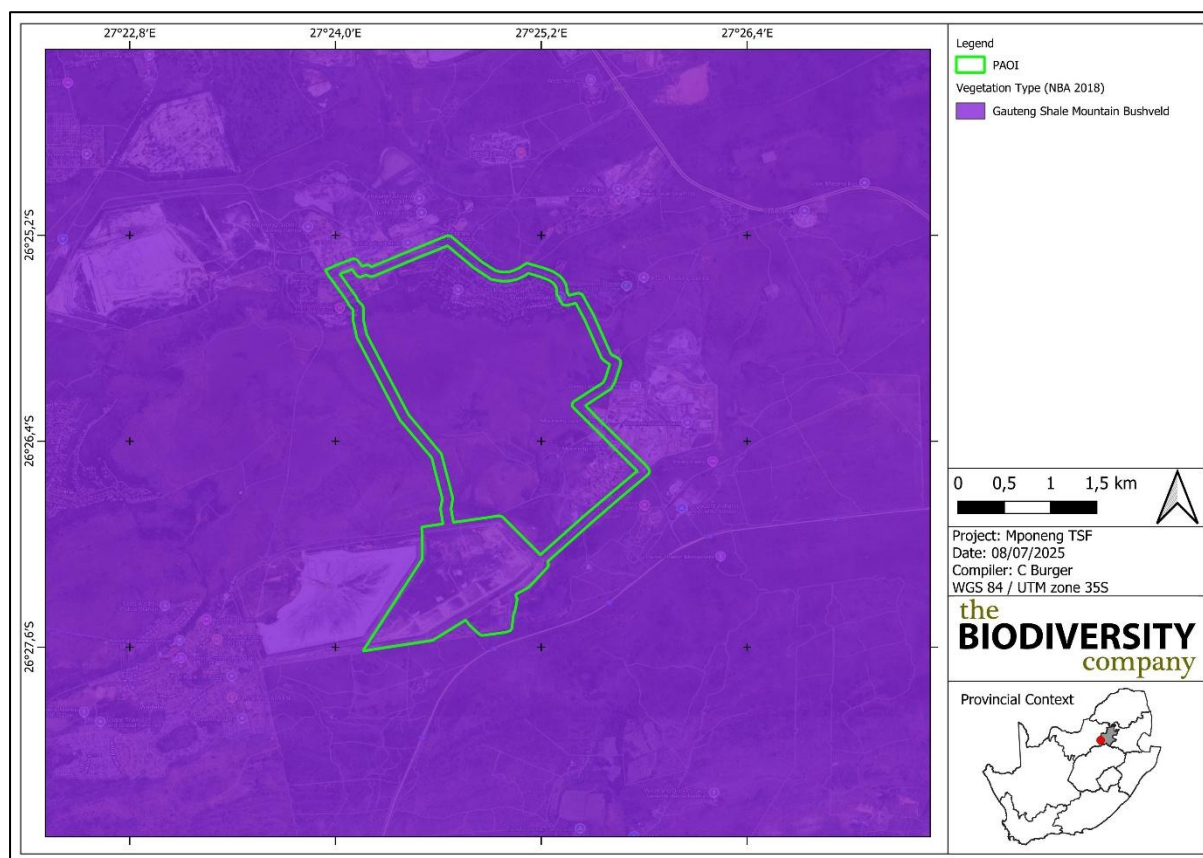


Figure 2-9 Map illustrating the vegetation types associated with the PAOI.

2.1.2.2 Gauteng Shale Mountain Bushveld

This vegetation unit occurs mainly on the ridge of the Gatsrand south of Carletonville-Westonaria-Lenasia. It also occurs as a narrow band along the ridge that runs from a point between Tarlton and Magaliesberg in the west, through Sterkfontein, Pelindaba, Atteridgeville to Klapperkop and southeastern Pretoria in the east. The altitude ranges between 1300 to 1 750 m. It consists of low, broken ridges varying in steepness and with high surface rock cover. Vegetation is a short, semi-open thicket dominated by a variety of woody species. The understorey is dominated by a variety of grasses. Some of the ridges form plateaus above the northern slopes that carry scrubby grassland with high surface rock cover.

The following species are important in the **Gauteng Shale Mountain Bushveld** vegetation type (d = dominant):

Small Trees: *Senegalia affra* (d), *Dombeya rotundifolia* (d), *Vachellia karroo*, *Celtis africana*, *Combretum molle*, *Cussonia spicata*, *Englerophytum magalismsontanum*, *Protea affra*, *Searsia leptodictya*, *Vangueria infausta*, *Zanthoxylum capense*, *Ziziphus mucronata*.

Tall Shrubs: *Asparagus laricinus*, *Canthium gilfillanii*, *Chrysanthemoides monilifera*, *Dichrostachys cinerea*, *Diospyros austro-africana*, *D. lycioides* subsp. *lycioides*, *Ehretia rigida* subsp. *rigida*, *Euclea crispa* subsp. *crispa*, *Grewia occidentalis*, *Gymnosporia polyacantha*, *Olea europaea* subsp. *africana*, *Tephrosia capensis*, *T. longipes*.

Low Shrubs: *Acalypha angustata*, *Asparagus suaveolens*, *Athrixia elata*, *Felicia muricata*, *Indigofera comosa*, *Rhus magalismsontana* subsp. *magalismsontana*.

Geoxylic Suffrutex: *Elephantorrhiza elephantina*.

Succulent Shrub: *Kalanchoe rotundifolia*.

Woody Climber: *Ancylobotrys capensis*.

Graminoids: *Hyparrhenia dregeana* (d), *Cymbopogon caesius*, *C. pospischilii*, *Digitaria eriantha* subsp. *eriantha*, *Eragrostis curvula*.

Herbs: *Dicoma zeyheri*, *Helichrysum nudifolium*, *H. rugulosum*, *Hermannia lancifolia*, *Hibiscus pusillus*, *Selaginella dregei*, *Senecio venosus*, *Vernonia natalensis*, *V. oligocephala*.

Geophytic Herbs: *Cheilanthes hirta*, *Pellaea calomelanos*, *Scadoxus puniceus*.

Conservation Status

This vegetation type is classified as Least Concern (RLE, 2022). The national target for conservation protection for this vegetation type is 24%. Less than 1% is statutorily conserved, for example, the Skanskop and Hartbeesthoek Nature Reserves, Magaliesberg Nature Area and Groenkloof National Park. Additionally, over 1% conserved in other reserves including the John Nash Nature Reserve, Cheetah Park and Hartbeesthoek Radio Astronomy Observatory. About 21% transformed mainly by urban and built-up areas, mines and quarries, cultivation and plantations. Wattles a common invasive plant in places.

2.1.2.3 Expected Flora Species

The Global Biodiversity Information Facility (GBIF) database lists 98 flora species expected to occur within the area (Appendix C). Four (4) of these species are considered as Species of Conservation Concern (SCC). Two (2) species were listed as per the DEA Screening tool report (Table 2-2).

Please note that the Screening Tool report includes lists of bird, mammal, reptile, amphibian, butterfly, and plant species of conservation concern known or expected to occur on the proposed development footprint. Some of these SCC are sensitive to illegal harvesting. Such species have had their names obscured and are listed as sensitive plant unique number / sensitive animal unique number. As per the best practise guideline that accompanies the protocol and screening tool (Species Environmental Assessment Guideline, 2022), the name of the sensitive species may not appear in the final EIA report nor any of the specialist reports released into the public domain. It should be referred to as sensitive plant or sensitive animal and its threat status may be included, e.g. critically endangered sensitive plant or endangered sensitive animal.

Table 2-2 *Threatened flora species that are expected to occur within the PAOI, VU = Vulnerable, CR = Critically Endangered, NT = Near Threatened and NE = Not Evaluated*

Species Name	Regional	IUCN	Habitat	Screening Tool Sensitivity	Likelihood of Occurrence	Reason
<i>Adromischus umbraticola</i>	NT	NE	Plants grow on south-facing rock crevices on ridges	-	Confirmed	Suitable habitat within PAOI
<i>Khadia beswickii</i>	VU	CR	Open shallow soil over rocks in grassland.	Medium	Confirmed	Suitable habitat within PAOI
<i>Lithops leslie subsp. lesliei</i>	VU	NE	Occurs primarily in arid grasslands, usually in rocky places, growing under the protection of forbs and grasses	-	Moderate	Suitable habitat within PAOI

Species Name	Regional	IUCN	Habitat	Screening Tool Sensitivity	Likelihood of Occurrence	Reason
<i>Sensitive Species 1248</i>	VU	NE	-	Medium	Moderate	Suitable habitat within PAOI

2.1.3 Faunal Baseline

2.1.3.1 Amphibians

Based on the FrogMap, 22 amphibian species are expected to occur within the PAOI (Appendix C). One (1) amphibian SCC is expected to occur within the project area (Table 2-3).

Table 2-3 *SCC amphibian species that are expected to occur within the PAOI LC = Least Concern and NT = Near Threatened*

Species	Common Name	Conservation Status		Likelihood of Occurrence	Reason
		Regional	Global		
<i>Pyxicephalus adspersus</i>	Giant Bull Frog	NT	LC	Moderate	Suitable habitat within PAOI

2.1.3.2 Reptiles

Based on the ReptileMAP database, 67 reptile species are expected to occur within the area (Appendix C). Three (3) species are regarded as SCCs (Table 2-4). No species were listed by the Screening Tool.

Table 2-4 *SCC reptile species that are expected to occur within the PAOI LC = Least Concern, NT = Near Threatened and VU = Vulnerable*

Species	Common Name	Conservation Status		Likelihood of Occurrence	Reason
		Regional	Global		
<i>Chamaesaura aenea</i>	Coppery Grass Lizard	LC	NT	Moderate	Some suitable habitat present
<i>Crocodylus niloticus</i>	Nile Crocodile	VU	LC	Low	No suitable habitat present
<i>Homoroselaps dorsalis</i>	Striped Harlequin Snake	LC	NT	Moderate	Some suitable habitat present

2.1.3.3 Mammals

The MammalMap lists 108 mammal species that could be expected to occur within the area (Appendix C). This list excludes large mammal species that are normally restricted to protected areas. Fifteen (15) of these expected species are regarded as SCC (Table 2-5). Of these 15 SCCs, 11 have been assigned a low likelihood of occurrence based on the lack of suitable habitat in the project area. Four (4) species have been assigned a moderate likelihood of occurrence. Two (2) species were listed by the Screening Tool.

Table 2-5 *SCC mammal species that are expected to occur within the project area EN = Endangered, LC = Least Concern, NT = Near Threatened and VU = Vulnerable*

Species	Common Name	Conservation Status		Screening Tool Sensitivity	Likelihood of occurrence	Reason
		Regional	IUCN			
<i>Aonyx capensis</i>	African Clawless Otter	NT	NT	-	Low	No suitable habitat present
<i>Atelerix frontalis</i>	Southern African Hedgehog	NT	LC	-	Moderate	Some suitable habitat present
<i>Cloeotis percivali</i>	Percival's Short-eared Trident Bat	EN	LC	-	Low	No suitable habitat present

Species	Common Name	Conservation Status		Screening Tool Sensitivity	Likelihood of occurrence	Reason
		Regional	IUCN			
<i>Crocidura maquassiensis</i>	Makwassie Musk Shrew	VU	LC	Medium	Moderate	Some suitable habitat present
<i>Crocidura mariquensis</i>	Swamp Musk Shrew	NT	LC	-	Low	No suitable habitat present
<i>Eidolon helvum</i>	African Straw-colored Fruit Bat	LC	NT	-	Low	No suitable habitat present
<i>Felis nigripes</i>	Black-footed Cat	VU	VU	-	Low	No suitable habitat present
<i>Hydricis maculicollis</i>	Spotted-necked Otter	VU	NT	Medium	Low	No suitable habitat present
<i>Leptailurus serval</i>	Serval	NT	LC	-	Moderate	Some suitable habitat present
<i>Mystromys albicaudatus</i>	African White-tailed Rat	VU	EN	-	Low	No suitable habitat present
<i>Otomys auratus</i>	Southern African Vlei Rat (Grassland type)	NT	NT	-	Moderate	Some suitable habitat present
<i>Panthera pardus</i>	Leopard	VU	VU	-	Low	No suitable habitat present
<i>Pipistrellus rusticus</i>	Rusty Pipistrelle	LC	NT	-	Low	No suitable habitat present
<i>Poecilogale albinucha</i>	African Striped Weasel	NT	LC	-	Low	No suitable habitat present
<i>Rhinolophus blasii</i>	Blasius's Horseshoe Bat	NT	LC	-	Low	No suitable habitat present

2.1.3.4 Avifauna

SABAP2 data indicate that 278 avifauna species are expected for the PAOI and surrounding areas (Appendix C). Of these, 27 are considered SCC (Table 2-6). The likelihood of occurrence within the POAI is included here. The Screening Tool lists three (3) avifauna SCC that could be expected to occur.

Table 2-6 *Threatened avifauna species that are expected to occur within the PAOI. EN = Endangered, LC = Least Concern, NT = Near Threatened and VU = Vulnerable*

Common Name	Species	Regional *	Global *	Screening Tool Sensitivity	Likelihood of Occurrence	Reason
African Darter	<i>Anhinga rufa</i>	NT	LC	-	High	Suitable habitat within PAOI
African Grass Owl	<i>Tyto capensis</i>	VU	LC	Medium	Confirmed	Suitable habitat within PAOI
African Marsh Harrier	<i>Circus ranivorus</i>	VU	LC	-	Moderate	Some suitable habitat present
Black Harrier	<i>Circus maurus</i>	EN	EN	-	Low	No suitable habitat
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	NT	LC	-	Moderate	Some suitable habitat present
Black-winged Kite	<i>Elanus caeruleus</i>	NT	LC	-	High	Suitable habitat within PAOI
Black-winged Pratincole	<i>Glareola nordmanni</i>	LC	NT	-	Moderate	Some suitable habitat present
Cape Shoveler	<i>Spatula smithii</i>	NT	LC	-	Moderate	Some suitable habitat present
Cape Vulture	<i>Gyps coprotheres</i>	VU	VU	-	Low	No suitable habitat
Curlew Sandpiper	<i>Calidris ferruginea</i>	VU	VU	-	Moderate	Some suitable habitat present
Caspian Tern	<i>Hydroprogne caspia</i>	VU	LC	Medium	Low	No suitable habitat
White-bellied Korhaan	<i>Eupodotis senegalensis</i>	VU	LC	Medium	Moderate	Some suitable habitat present
European Roller	<i>Coracias garrulus</i>	NT	LC	-	Moderate	Some suitable habitat present

Common Name	Species	Regional *	Global +	Screening Tool Sensitivity	Likelihood of Occurrence	Reason
Fulvous Whistling Duck	<i>Dendrocygna bicolor</i>	NT	LC	-	Low	No suitable habitat
Great Crested Grebe	<i>Podiceps cristatus</i>	VU	LC	-	Low	No suitable habitat
Great Egret	<i>Ardea alba</i>	NT	LC	-	High	Suitable habitat within PAOI
Greater Flamingo	<i>Phoenicopterus roseus</i>	NT	LC	-	Low	No suitable habitat
Hamerkop	<i>Scopus umbretta</i>	NT	LC	-	High	Suitable habitat within PAOI
Kittlitz's Plover	<i>Charadrius pecuarius</i>	NT	LC	-	Moderate	Some suitable habitat present
Knob-billed Duck	<i>Sarkidiornis melanotos</i>	NT	LC	-	Moderate	Some suitable habitat present
Lanner Falcon	<i>Falco biarmicus</i>	NT	LC	-	Moderate	Some suitable habitat present
Lesser Flamingo	<i>Phoeniconaias minor</i>	VU	NT	-	Low	No suitable habitat
Lesser Kestrel	<i>Falco naumanni</i>	VU	LC	-	High	Suitable habitat within PAOI
Maccoa Duck	<i>Oxyura maccoa</i>	VU	EN	-	Moderate	Some suitable habitat present
Marsh Owl	<i>Asio capensis</i>	NT	LC	-	High	Suitable habitat within PAOI
Melodious Lark	<i>Mirafra cheniana</i>	NT	LC	-	Moderate	Some suitable habitat present
Red-billed Teal	<i>Anas erythrorhyncha</i>	NT	LC	-	High	Suitable habitat within PAOI
Secretarybird	<i>Sagittarius serpentarius</i>	VU	EN	-	High	Suitable habitat within PAOI
Southern Pochard	<i>Netta erythrophthalma</i>	NT	LC	-	Moderate	Some suitable habitat present
Yellow-billed Duck	<i>Anas undulata</i>	NT	LC	-	High	Suitable habitat within PAOI

*(Birdlife 2025), + (IUCN 2021).

2.1.4 DFFE Screening Tool

According to the Screening Tool Report generated (Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended).

- Terrestrial Biodiversity Theme sensitivity is Very High for the PAOI, with the possibility of a CBA 2, ESA 1 and NPAES areas being present (Figure 2-10);
- Plant Species Theme sensitivity is Medium for the PAOI, with the possibility of two (2) medium sensitivity plant species being present (Figure 2-11); and
- Animal Species Theme sensitivity is Medium for the PAOI, with the possibility of numerous medium sensitivity species being present (Figure 2-12).

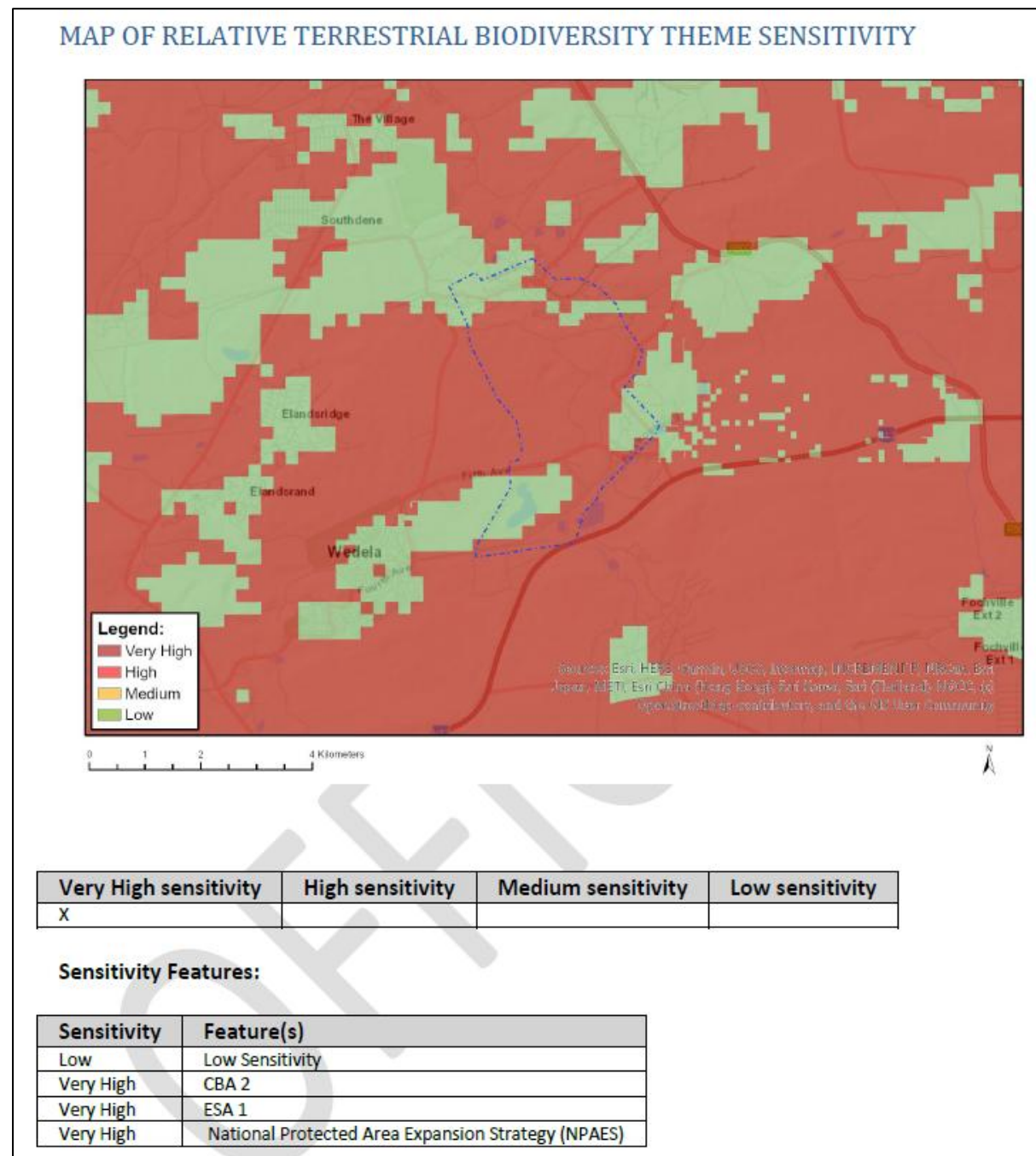


Figure 2-10 *Relative terrestrial biodiversity¹ theme sensitivity for the PAOI*

¹ Note that the screening still uses the previous conservation plan

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eladatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Khadia beswickii
Medium	Sensitive species 1248

Figure 2-11 Relative plant species theme sensitivity for the PAOI

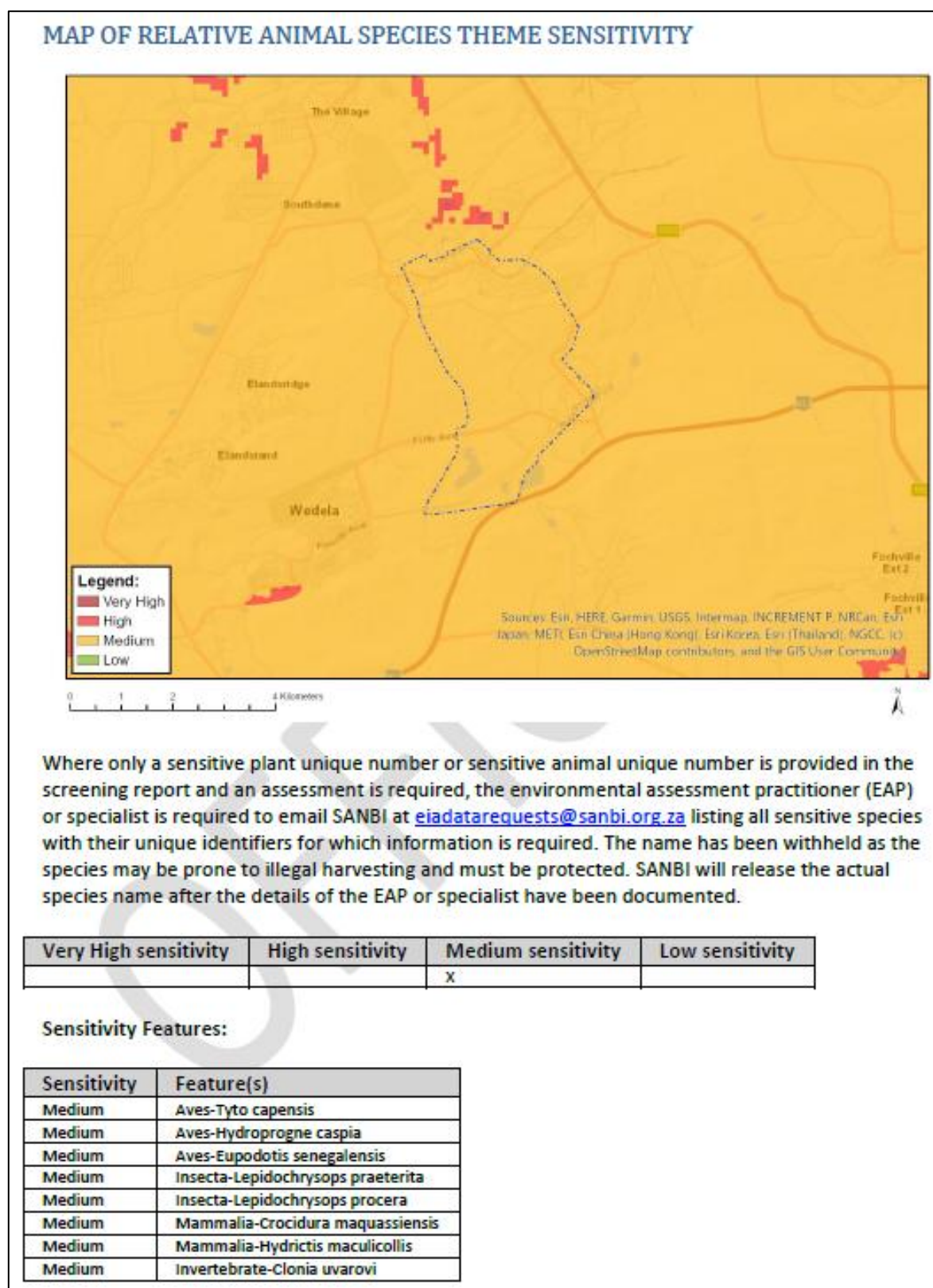


Figure 2-12 Relative animal species theme sensitivity for the PAOI

3 Conclusion

The results of the desktop assessment indicate that the project area encompasses zones of moderate to high ecological sensitivity, particularly in regions associated with ridges and grassland habitats along the preferred pipeline alignment. These areas are characterized by a high probability of occurrence of SCC. In contrast, sections of the project area classified as modified or transformed landscapes will most likely be assigned a lower sensitivity rating due to their reduced ecological integrity and diminished likelihood of supporting SCC. The alternative pipeline alignment is anticipated to exhibit lower overall sensitivity, as it predominantly traverses areas that have already been modified. It is important to note that these preliminary sensitivity ratings and assumptions will be subject to verification and refinement following a comprehensive field survey to be conducted during the forthcoming wet season, in accordance with best practice guidelines for ecological assessments.

The expected anthropogenic activities associated with the development are likely to drive habitat destruction, causing displacement of fauna and flora, and possibly even direct mortality. Land clearing destroys local wildlife habitats and can lead to the loss of local breeding grounds, nesting sites and wildlife movement corridors, such as rivers, streams and drainage lines, or other locally important features. The further removal of natural vegetation may reduce the habitat available for fauna species and may reduce animal populations and species compositions within the area. The significance of these impacts will be assessed after the wet season fieldwork.

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5 Appendix Items

5.1 Appendix A: Methods

5.1.1.1 Desktop Dataset Baseline

5.1.1.2 Ecologically Important Landscape Features

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

- National Biodiversity Assessment 2018 (Skowno *et al*, 2019) - The purpose of the National Biodiversity Assessment (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 components of biodiversity: genes, species and ecosystems; and assesses biodiversity and ecosystems across terrestrial, freshwater, estuarine and marine environments. The two headline indicators assessed in the NBA are:
 - Red List of Ecosystems (RLE) 2021 – The list was first published in 2011 and has since been substantially revised by authors Dr Andrew Skowno and Mrs Maphale Monyeke (SANBI, 2022). This list is based on assessments that followed the International Union for Conservation of Nature (IUCN) Red List of Ecosystems Framework (version 1.1) and covers all 456 terrestrial ecosystem types described in South Africa by Mucina and Rutherford (2006). A total of 120 of the 456 terrestrial ecosystem types assessed are categorised as threatened and together make up approximately 10% of the remaining natural habitat in the country. Of these 120 ecosystem types, 55 are Critically Endangered (CR), 51 Endangered (EN) and 14 are Vulnerable (VU). The remainder are categorised as Least Concern (LC) (SANBI, 2022; Skowno & Monyeke, 2021).
- 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. Not Protected, Poorly Protected or Moderately Protected ecosystem types are collectively referred to as under-protected ecosystems.
- Protected areas:
 - South Africa Protected Areas Database (SAPAD) and South Africa Conservation Areas Database (SACAD) (DFFE, 2025a) – The South African Protected Areas Database (SAPAD) and South Africa Conservation Areas Database (SACAD) contains spatial data for the conservation of South Africa. It includes spatial and attribute information for both formally protected areas and areas that have less formal protection. The database 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) (DFFE, 2022b) – The National Protected Area Expansion Strategy (NPAES) provides spatial information on areas that are suitable for terrestrial ecosystem protection. These focus areas are large, intact and unfragmented and are therefore, of high importance for biodiversity, climate resilience and freshwater protection.
- Conservation/Biodiversity Sector Plans:

- **Gauteng Conservation Plan (C-Plan) version 4 (GDE, 2024)** – The Gauteng C-Plan has been developed using a systematic conservation planning approach. Systematic conservation planning has become the standard approach to conservation planning in South Africa, due to its robust scientific approach and internationally recognized principles and methodologies. The map is designed to be used at approximately 1:50 000 scale as the integrated biodiversity input into land use planning and decision making. Gauteng C-Plan v4 should be used as the key biodiversity informant in the compilation of bioregional plans, Environmental Management Frameworks and Municipal Spatial Development Frameworks, and should be a primary biodiversity consideration in Environmental Impact Assessments. The Gauteng C-Plan v4 delineates biodiversity priority areas called Critical Biodiversity Areas and Ecological Support Areas.
- **Critical Biodiversity Areas (CBAs)** – Critical Biodiversity Areas (CBAs) include irreplaceable sites where no other options exist for meeting targets for biodiversity features, as well as best-design sites which represent an efficient configuration of sites to meet targets in an ecologically sustainable way that is least conflicting with other land uses and activities. CBAs include both terrestrial and aquatic habitats, including threatened species and their habitat requirements, as well as important ecological process that ensure the persistence of biodiversity.
- **Ecological Support Areas (ESAs)** - Areas are required to support and sustain the ecological functioning of Critical Biodiversity Areas (CBAs). For terrestrial and aquatic environments, these areas are functional but are not necessarily pristine natural areas. They are however required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within the CBAs, and which also contributes.
- **A new set of Key Biodiversity Areas (KBA) specific to South Africa** has been identified using the Global Standard for the Identification of Key Biodiversity Areas version 1.2 (IUCN 2016), applied to South African species and ecosystems. KBAs are critical sites that play a vital role in maintaining global biodiversity by serving as essential habitats for species. The identification of KBAs enables governments and civil society to pinpoint key locations crucial for species and their habitats worldwide. This understanding facilitates collaborative efforts to manage and conserve these areas, thereby safeguarding global biological diversity and supporting international biodiversity objectives. Unlike the Important Bird Areas (IBAs), which primarily focus on birds, the KBA framework encompasses a broader spectrum of biodiversity, including mammals, amphibians, plants, and other taxa. BirdLife South Africa (BLSA), in consultation with the KBA National Coordination Group, has opted to retire IBAs and integrate KBAs into its conservation strategy. This strategic shift acknowledges the necessity of investing resources effectively to protect avian and other macroecological elements at the site level within a comprehensive framework of biodiversity conservation (KBA NCG, 2024); and
- **Gauteng Ridges**

The quartzite ridges of Gauteng are one of the most important natural assets in this northern province of South Africa. This is because these ridges, and the areas immediately surrounding them, provide unique habitat for a wide variety of fauna and flora, some of which are Red-Listed, rare or endemic species, or in the case of certain plant species, are found nowhere else in South Africa or around the world.

In order to give practical effect to this policy, the Gauteng Department of Environment (GDE) (previously the Gauteng Department of Agriculture and Rural Development (GDARD) has classified all ridges in Gauteng into one of four classes, based on the existing extent and

percentage of area converted by urban development or disturbed by other human activities. According to GDARD (2019), the ridges within Gauteng may be classified as follows:

- Class 1 Ridges: 5% or less of the ridge area has been transformed by human activity (Approx. 58% of ridges fall within this category);
- Class 2 Ridges: Between 6 and 34% of the ridge area has been transformed by human activity (Approx. 23% of ridges fall within this category);
- Class 3 Ridges: Between 35 and 64% of the ridge area has been transformed by human activity (Approx. 8% of ridges fall within this category); and
- Class 4 Ridges: Over 65% of the ridge area has been transformed by human activity (Approx. 11% of ridges fall within this category).

The 2019 Ridges Guideline has defined general guidelines that must be followed with regard to the amount of development that should be permitted on different ridges according to their class. GDE (2019) stipulates that no development is to be permitted on any class 1 ridge, and varying levels of development may be permissible with regards to the higher ridge classes – depending on the impact level of the proposed activity and the corresponding spatial scale. Buffers and permitted developments are as follows (GDE, 2019):

- Class 1 Ridges: Only low impact activities with an ecological footprint of 5% or less in the 200 m buffer zone of the ridge will be supported and no development will be permitted in the ridge itself;
 - Class 2 Ridges: Development activities and uses that have a high environmental impact on a Class 2 ridge will not be permitted. Low impact development activities, such as tourism facilities, which comprise of an ecological footprint of 5% or less of the property may be supported (the ecological footprint includes all areas directly impacted on by a development activity, including all paved surfaces, landscaping, property access and service provision). Low impact development activities on a ridge will not be supported where it is feasible to undertake the development on a portion of the property abutting the ridge;
 - Class 3 Ridges: The guidelines for Class 2 ridges will be applied to areas of the ridge that have not been significantly impacted on by human activity. The guidelines for Class 3 ridges will be applied to areas of the ridge that have been significantly impacted on by human activity; and
 - Class 4 Ridges: Further development activities will not be supported in areas of the ridge where the remaining contiguous extent of natural habitat is 4 ha or more.
- Freshwater Ecology:
 - Strategic Water Source Areas (SWSAs) (Le Maitre *et al*, 2018) – SWSAs are defined as areas of land that supply a quantity of mean annual surface water runoff in relation to their size and therefore, contribute considerably to the overall water supply of the country. These are key ecological infrastructure assets and the effective protection of surface water SWSAs areas is vital for national security because a lack of water security will compromise national security and human wellbeing.
 - South African Inventory of Inland Aquatic Ecosystems (SAIIAE) (Van Deventer *et al*, 2018) – A South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was established during the National Biodiversity Assessment of 2018. It is a collection

of data layers that represent the extent of river and inland wetland ecosystem types as well as pressures on these systems.

- National Freshwater Ecosystem Priority Area (NFEPA) (Nel *et al.*, 2011) – The NFEPA database provides strategic spatial priorities for conserving the country's freshwater ecosystems and associated biodiversity as well as supporting sustainable use of water resources.
- Mining and Biodiversity Guidelines:
 - The Mining and Biodiversity Guidelines (2013) was developed by the Department of Mineral Resources, the Chamber of Mines, the SANBI and the South African Mining and Biodiversity Forum, with the intention to find a balance between economic growth and environmental sustainability. The Guideline is envisioned as a tool to “foster a strong relationship between biodiversity and mining, which will eventually translate into best practice within the mining sector. It provides a tool to facilitate the sustainable development of South Africa's mineral resources, in a way that enables regulators, industry and practitioners to minimise the impact of mining on the country's biodiversity and ecosystem services. It provides the mining sector with a practical, user- friendly manual for integrating biodiversity considerations into the planning processes and managing biodiversity during the operational phases of a mine, from exploration through to closure. The Guideline provides explicit direction in terms of where: mining-related impacts are legally prohibited; biodiversity priority areas may present high risks for mining projects; and biodiversity may limit the potential for mining.
 - In identifying biodiversity priority areas, which have different levels of risk against mining, the Guideline categorises biodiversity priority areas into four categories of biodiversity priority areas in relation to their importance from a biodiversity and ecosystem service point of view as well as the implications for mining in these areas:
 - A) Legally protected areas, where mining is prohibited;
 - B) Areas of highest biodiversity importance, which are at the highest risk for mining;
 - C) Areas of high biodiversity importance, which are at a high risk for mining; and
 - D) Areas of moderate biodiversity importance, which are at a moderate risk for mining.

Table 5-1 presents the four different categories and the implications for mining within each of these categories.

Table 5-1 Summary of the Mining and Biodiversity Guidelines

Category	Biodiversity priority areas	Risk for mining	Implications for mining
A. Legally protected	<ul style="list-style-type: none"> Protected areas (including National Parks, Nature Reserves, World Heritage Sites, Protected Environments, Nature Reserves) Areas declared under Section 49 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002) 	Mining prohibited	<p>Mining projects cannot commence as mining is legally prohibited. Although mining is prohibited in Protected Areas, it may be allowed in Protected Environments if both the Minister of Mineral Resources and Minister of Environmental Affairs approve it.</p> <p>In cases where mining activities were conducted lawfully in protected areas before Section 48 of the Protected Areas Act (No. 57 of 2003) came into effect, the Minister of Environmental Affairs may, after consulting with the Minister of Mineral Resources, allow such mining activities to continue, subject to prescribed conditions that reduce environmental impacts.</p>
B. Highest biodiversity importance	<ul style="list-style-type: none"> CE and EN CBAs (or equivalent areas) from provincial spatial biodiversity plans River and wetland Freshwater Ecosystem Priority Areas (FEPAs) and a 1 km buffer around these FEPAs Ramsar Sites 	Highest risk for mining	<p>Environmental screening, environmental impact assessment (EIA) and their associated specialist studies should focus on confirming the presence and significance of these biodiversity features, and to provide site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making for mining, water use licenses, and EAs.</p> <p>If they are confirmed, the likelihood of a fatal flaw for new mining projects is very high because of the significance of the biodiversity features in these areas and the associated ecosystem services. These areas are viewed as necessary to ensure protection of biodiversity, environmental sustainability, and human well-being.</p> <p>An EIA should include the strategic assessment of optimum, sustainable land use for a particular area and will determine the significance of the impact on biodiversity. This assessment should fully consider the environmental sensitivity of the area, the overall environmental and socio-economic costs and benefits of mining, as well as the potential strategic importance of the minerals to the country. Authorisations may well not be granted. If granted, the authorisation may set limits on allowed activities and impacts and may specify biodiversity offsets that would be written into license agreements and/or authorisations.</p>
C. High biodiversity importance	<ul style="list-style-type: none"> Protected area buffers (including buffers around National Parks, World Heritage Sites* and Nature Reserves) Transfrontier Conservation Areas (remaining areas outside of formally proclaimed protected areas) Other identified priorities from provincial spatial biodiversity plans High water yield areas Coastal Protection Zone Estuarine functional zone 	High risk for mining	<p>These areas are important for conserving biodiversity, for supporting or buffering other biodiversity priority areas, and maintaining important ecosystem services for particular communities or the country as a whole.</p> <p>An EIA should include an assessment of optimum, sustainable land use for a particular area and will determine the significance of the impact on biodiversity.</p> <p>Mining options may be limited in these areas, and limitations for mining projects are possible.</p> <p>Authorisations may set limits and specify biodiversity offsets that would be written into license agreements and/or authorisations.</p>

Category	Biodiversity priority areas	Risk for mining	Implications for mining
D. Moderate biodiversity importance	<ul style="list-style-type: none"> • Ecological support areas • Vulnerable ecosystems • Focus areas for protected area expansion (land-based and offshore protection) 	Moderate risk for mining	<p>These areas are of moderate biodiversity value. EIAs and their associated specialist studies should focus on confirming the presence and significance of these biodiversity features, identifying features (e.g. threatened species) not included in the existing datasets, and on providing site-specific information to guide the application of the mitigation hierarchy.</p> <p>Authorisations may set limits and specify biodiversity offsets that would be written into license agreements and/or authorisations.</p>

5.1.2 Baseline Flora Assessment

The desktop flora assessment encompassed an assessment of all the vegetation units and habitat types within the PAOI, as well as the identification of expected plant species and any locally occurring flora SCC.

The Vegetation of South Africa, Lesotho, and Swaziland (Mucina & Rutherford, 2006) and the 2018 Terrestrial & Freshwater Assessment by SANBI (2018) was used to identify the vegetation types that would have occurred under natural or pre-anthropogenically altered conditions. Furthermore, the GBIF database (www.GBIF.org) was accessed to compile a list of expected flora species within the PAOI. The Red List of South African Plants website (SANBI, 2016) was used to provide the most current account of the national conservation status of flora.

The latest information regarding provincially, and nationally protected flora was obtained from the following published legislative sources:

- Provincially Protected Plant Species (Transvaal Nature Conservation Ordinance No. 12 of 1983);
- Gauteng Nature Conservation Bill, 2014 (Draft);
- Nationally Protected plant species (The 2007 lists of Threatened or Protected Species (TOPS), published in terms of Section 56(1) of the NEM:BA No. 10 of 2004); and
- List of Nationally Protected Tree Species (DEFF, 2022).

5.1.3 Baseline Fauna Assessment

The faunal desktop assessment comprised of the following:

- Compiling an expected amphibian list generated from the FrogMap database of the Animal Demography Unit (Fitzpatrick Institute of African Ornithology, 2024a) using the 2627 quarter degree square;
- Compiling an expected reptile list generated from the ReptileMap database of the Animal Demography Unit (Fitzpatrick Institute of African Ornithology, 2024b) using the 2627 quarter degree square;
- Compiling an expected mammal list generated from the MammalMap database of the Animal Demography Unit (Fitzpatrick Institute of African Ornithology, 2024c) using the 2627 quarter degree square; and

South Africa's official site for Species Information and National Red Lists (SANBI, 2022) was used to provide the most current national Red-List status of fauna. The latest information regarding provincially, and nationally protected fauna was obtained from the following published legislative lists:

- Provincially Protected Wildlife Species (Transvaal Nature Conservation Ordinance No. 12 of 1983); and
- Nationally Protected Wildlife species (The 2007 lists of Threatened or Protected Species (TOPS), published in terms of Section 56(1) of the NEM:BA No. 10 of 2004).

5.1.4 Field Assessment

5.1.4.1 Vegetation & Flora Survey

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 in order to perform a rapid vegetation and ecological assessment at each sample site.

Homogenous vegetation units were subjectively identified using satellite imagery and existing land cover maps (confirmed during the field survey). The floristic diversity and search for protected plants and flora SCC were conducted through timed meanders within representative habitat units delineated during the desktop assessment. Emphasis was placed on sensitive habitats, especially those overlapping with the PAOI.

The timed random meander method is a highly efficient method for conducting floristic analysis, specifically in detecting protected plants and flora SCC and maximising floristic coverage. In addition, the method is time and cost effective and highly suited for compiling observed 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.

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

Species were identified in field wherever possible. If they could not be identified in the field, field guides and texts were used. Relevant field guides and texts consulted for identification purposes included, but was not limited, to the following:

- Identification Guide to Southern African Grasses: An Identification Manual with Keys, Descriptions, and Distributions (Fish *et al.*, 2015);
- iNaturalist;
- Flowering Plants of the Southern Kalahari (Van Rooyen and Van Rooyen, 2019);
- Problem Plants and Alien Weeds of South Africa (Bromilow, 2010);
- Field Guide to Succulents in Southern Africa (Smith *et al.*, 2017);
- Guide to the Aloes of South Africa (Van Wyk & Smith, 2014);
- Medicinal Plants of South Africa (Van Wyk *et al.*, 2013).

5.1.4.2 Fauna Survey

The faunal component of this report pertains only to mammals and herpetofauna (reptiles and amphibians), as a separate avifauna assessment was conducted. The faunal field survey utilised a variety of sampling techniques, including but not limited to:

- Visual and auditory searches: This involves strategic meandering and the use of binoculars and specialist camera equipment to view species from a distance without them being disturbed;
- Active hand-searches: Used for species that shelter in or under particular micro-habitats (typically rocks, exfoliating rock outcrops, fallen trees, leaf litter, bark etc.);
- The identification of tracks and signs, and listening to species calls; and
- Utilization of local knowledge;

Relevant field guides and texts consulted for identification purposes included the following:

- The Mammals of the Southern African Subregion (Skinner & Chimimba, 2005);
- 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);
- Stuarts' Field Guide to Mammals of Southern Africa including Angola, Zambia & Malawi (Stuart and Stuart, 2015); and
- A Field Guide to the Tracks and Signs of Southern and East African Wildlife (Stuart and Stuart, 2000).

5.2 Appendix B: Terrestrial Site Ecological Importance

The different habitat types within the PAOI were delineated and identified based on observations made during the field survey, and information from available satellite imagery. These habitat types were assigned Ecological Importance (EI) categories based on their ecological integrity, conservation value, the presence of SCC 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 in the PAOI) and Receptor Resilience (RR) (its resilience to impacts).

BI is a function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor. The criteria for the CI and FI ratings are provided in Table 5-2 and Table 5-3 respectively.

Table 5-2 Summary of Conservation Importance (CI) criteria

Conservation Importance	Fulfilling Criteria
Very High	Confirmed or highly likely occurrence of Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Extremely Rare or CR species that have a global extent of occurrence (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.

	<p>If listed as threatened only under Criterion A, include if there are less than 10 locations or < 10 000 mature individuals remaining.</p> <p>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.</p> <p>Presence of Rare species.</p> <p>Globally significant populations of congregatory species (> 1% but < 10% of global population).</p>
Medium	<p>Confirmed or highly likely occurrence of populations of Near Threatened (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.</p> <p>Any area of natural habitat of threatened ecosystem type with status of VU.</p> <p>Presence of range-restricted species.</p> <p>> 50% of receptor contains natural habitat with potential to support SCC.</p>
Low	<p>No confirmed or highly likely populations of SCC.</p> <p>No confirmed or highly likely populations of range-restricted species.</p> <p>< 50% of receptor contains natural habitat with limited potential to support SCC.</p>
Very Low	<p>No confirmed and highly unlikely populations of SCC.</p> <p>No confirmed and highly unlikely populations of range-restricted species.</p> <p>No natural habitat remaining.</p>

Table 5-3 Summary of Functional Integrity (FI) criteria

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

BI can be derived from a simple matrix of CI and FI as provided in Table 5-4.

Table 5-4 Matrix used to derive Biodiversity Importance (BI) from Functional Integrity (FI) and Conservation Importance (CI)

Biodiversity Importance		Conservation Importance				
		Very High	High	Medium	Low	Very Low
Functional Integrity	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
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The fulfilling criteria to evaluate RR are based on the estimated recovery time required to restore an appreciable portion of functionality to the receptor, as summarised in Table 5-5.

Table 5-5 Summary of Receptor 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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) 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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) 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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) 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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) 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: (i) remain at a site even when a disturbance or impact is occurring, or (ii) return to a site once the disturbance or impact has been removed.

After the determination of BI and RR, the SEI can be ascertained using the matrix as provided in Table 5-6.

Table 5-6 Matrix used to derive Site Ecological Importance from Receptor Resilience (RR) and Biodiversity Importance (BI)

Site Ecological Importance		Biodiversity Importance				
		Very High	High	Medium	Low	Very Low
Receptor Resilience	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 project is provided in Table 5-7.

Table 5-7 Guideline for interpreting Site Ecological Importance in the context of proposed activities

Site Ecological Importance	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.

5.3 Appendix C: Expected Species Lists

5.3.1 Expected Flora Species

Family Name	Species Name	Ecology	Conservation Status	
			Regional	Global
Acanthaceae	<i>Justicia anagalloides</i>	Indigenous	LC	NE
Acanthaceae	<i>Barleria macrostegia</i>	Indigenous	LC	LC
Aizoaceae	<i>Khadia acutipetala</i>	Indigenous; Endemic	LC	NE
Aizoaceae	<i>Delosperma herbeum</i>	Indigenous	LC	NE
Aizoaceae	<i>Lithops leslie subsp. lesliei</i>	Indigenous	VU	NE
Amaryllidaceae	<i>Crinum graminicola</i>	Indigenous	LC	NE
Anacardiaceae	<i>Searsia pyroides</i>	Indigenous	LC	LC
Anacardiaceae	<i>Searsia rigida</i>	Indigenous; Endemic	LC	LC
Anacardiaceae	<i>Harpephyllum caffrum</i>	Indigenous	LC	LC
Apiaceae	<i>Deverra burchellii</i>	Indigenous	LC	NE
Apocynaceae	<i>Nerium oleander</i>	Not indigenous; Naturalised; Invasive	NE	LC
Araliaceae	<i>Cussonia paniculata</i>	Indigenous; Endemic	LC	LC
Arecaceae	<i>Washingtonia robusta</i>	Not indigenous; Cultivated; Naturalised; Invasive	NE	LC
Asparagaceae	<i>Ledebouria ovatifolia</i>	Indigenous	LC	NE
Asphodelaceae	<i>Bulbine narcissifolia</i>	Indigenous	LC	NE
Asteraceae	<i>Nidorella podocephala</i>	Indigenous	LC	NE
Asteraceae	<i>Berkheya pinnatifida</i>	Indigenous	LC	NE
Asteraceae	<i>Macleodium zeyheri</i>	Indigenous	LC	NE
Asteraceae	<i>Hilliardiella oligocephala</i>	Indigenous	LC	NE
Asteraceae	<i>Athrixia elata</i>	Indigenous	LC	NE
Asteraceae	<i>Brachylaena discolor</i>	Indigenous	LC	NE
Asteraceae	<i>Schkuhria pinnata</i>	Not indigenous; Naturalised	NE	NE
Asteraceae	<i>Zinnia peruviana</i>	Not indigenous; Naturalised; Invasive	NE	NE

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Asteraceae	<i>Nidorella resedifolia</i>	Indigenous	LC	NE
Asteraceae	<i>Geigeria burkei</i>	Indigenous	LC	NE
Asteraceae	<i>Bidens pilosa</i>	Not indigenous; Naturalised	NE	NE
Asteraceae	<i>Helichrysum setosum</i>	Indigenous	LC	NE
Asteraceae	<i>Berkheya radula</i>	Indigenous	LC	NE
Asteraceae	<i>Helichrysum rugulosum</i>	Indigenous	LC	NE
Asteraceae	<i>Helichrysum nudifolium</i>	Indigenous	LC	NE
Asteraceae	<i>Tagetes minuta</i>	Not indigenous; Naturalised; Invasive	NE	NE
Cactaceae	<i>Echinopsis spachiana</i>	Not indigenous; Naturalised; Invasive	NE	NE
Cactaceae	<i>Opuntia ficus-indica</i>	Not indigenous; Cultivated; Naturalised; Invasive	NE	DD
Campanulaceae	<i>Lobelia thermalis</i>	Indigenous	LC	NE
Celastraceae	<i>Gymnosporia polyacantha</i>	Indigenous; Endemic	LC	LC
Celastraceae	<i>Elaeodendron croceum</i>	Indigenous	LC	LC
Cleomaceae	<i>Sieruela maculata</i>	Indigenous	LC	NE
Cleomaceae	<i>Sieruela monophylla</i>	Indigenous	LC	NE
Crassulaceae	<i>Adromischus umbraticola</i>	Indigenous; Endemic	NT	NE
Cucurbitaceae	<i>Cucumis zeyheri</i>	Indigenous	LC	NE
Cyperaceae	<i>Cyperus niveus</i>	Indigenous	LC	NE
Cyperaceae	<i>Cyperus marginatus</i>	Indigenous	LC	NE
Cyperaceae	<i>Cyperus congestus</i>	Indigenous	LC	NE
Ebenaceae	<i>Diospyros lycioides</i>	Indigenous	LC	LC
Ehretiaceae	<i>Ehretia rigida</i>	Indigenous	LC	LC
Fabaceae	<i>Elephantorrhiza elephantina</i>	Indigenous	LC	NE
Fabaceae	<i>Tephrosia elongata</i>	Indigenous	LC	NE
Fabaceae	<i>Sesbania punicea</i>	Not indigenous; Naturalised; Invasive	NE	LC
Fabaceae	<i>Gleditsia triacanthos</i>	Not indigenous; Naturalised; Invasive	NE	LC

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Fabaceae	<i>Vigna vexillata</i>	Indigenous	LC	NE
Fabaceae	<i>Vachellia robusta</i>	Indigenous	LC	LC
Fabaceae	<i>Zornia linearis</i>	Indigenous	LC	NE
Fabaceae	<i>Eriosema salignum</i>	Indigenous	LC	NE
Geraniaceae	<i>Pelargonium luridum</i>	Indigenous	LC	LC
Geraniaceae	<i>Monsonia angustifolia</i>	Indigenous	LC	NE
Gesneriaceae	<i>Streptocarpus vandeleurii</i>	Indigenous; Endemic	LC	NE
Haloragaceae	<i>Myriophyllum aquaticum</i>	Not indigenous; Cultivated; Naturalised; Invasive	NE	NE
Iridaceae	<i>Tritonia nelsonii</i>	Indigenous	LC	NE
Lamiaceae	<i>Leonotis ocymifolia</i>	Indigenous	LC	LC
Lamiaceae	<i>Teucrium trifidum</i>	Indigenous	LC	NE
Lamiaceae	<i>Stachys spathulata</i>	Indigenous	LC	NE
Lamiaceae	<i>Ajuga ophrydis</i>	Indigenous	LC	NE
Lamiaceae	<i>Salvia runcinata</i>	Indigenous	LC	NE
Lamiaceae	<i>Ocimum angustifolium</i>	Indigenous	LC	NE
Malpighiaceae	<i>Sphedamnocarpus pruriens</i>	Indigenous	LC	NE
Malvaceae	<i>Grewia occidentalis</i>	Indigenous	LC	LC
Malvaceae	<i>Hibiscus pusillus</i>	Indigenous	LC	NE
Malvaceae	<i>Hibiscus trionum</i>	Not indigenous; Naturalised	NE	NE
Malvaceae	<i>Hibiscus malacospermus</i>	Indigenous	LC	NE
Malvaceae	<i>Hermannia lancifolia</i>	Indigenous; Endemic	LC	NE
Myrtaceae	<i>Callistemon viminalis</i>	Not indigenous; Naturalised; Invasive	NE	LC
Myrtaceae	<i>Syzygium australe</i>	Not indigenous; Cultivated; Naturalised; Invasive	NE	NE
Oxalidaceae	<i>Oxalis obliquifolia</i>	Indigenous	LC	NE
Poaceae	<i>Elionurus muticus</i>	Indigenous	LC	NE
Poaceae	<i>Cenchrus clandestinus</i>	Not indigenous; Cultivated; Naturalised; Invasive	NE	LC

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Poaceae	<i>Andropogon eucomus</i>	Indigenous	LC	NE
Poaceae	<i>Cenchrus geniculatus</i>	Indigenous	LC	LC
Polygalaceae	<i>Polygala hottentotta</i>	Indigenous	LC	NE
Polygonaceae	<i>Oxygonum dregeanum</i>	Indigenous	LC	NE
Polygonaceae	<i>Rumex usambarensis</i>	Not indigenous; Naturalised; Invasive	NE	NE
Pteridaceae	<i>Pellaea calomelanos</i>	Indigenous	LC	NE
Ranunculaceae	<i>Clematis villosa</i>	Indigenous	LC	NE
Rosaceae	<i>Agrimonia bracteata</i>	Indigenous	LC	NE
Rosaceae	<i>Pyracantha angustifolia</i>	Not indigenous; Cultivated; Naturalised; Invasive	NE	LC
Rubiaceae	<i>Richardia humistrata</i>	Not indigenous; Naturalised	NE	NE
Rubiaceae	<i>Pygmaeothamnus zeyheri</i>	Indigenous	LC	NE
Rubiaceae	<i>Vangueria infausta</i>	Indigenous	LC	LC
Rubiaceae	<i>Pentanisia angustifolia</i>	Indigenous	LC	NE
Scrophulariaceae	<i>Buddleja salviifolia</i>	Indigenous	LC	LC
Scrophulariaceae	<i>Jamesbrittenia aurantiaca</i>	Indigenous	LC	NE
Scrophulariaceae	<i>Selago densiflora</i>	Indigenous	LC	NE
Scrophulariaceae	<i>Jamesbrittenia burkeana</i>	Indigenous	LC	NE
Solanaceae	<i>Solanum campylacanthum</i>	Indigenous	LC	LC
Solanaceae	<i>Datura stramonium</i>	Not indigenous; Naturalised; Invasive	NE	NE
Thymelaeaceae	<i>Gnidia capitata</i>	Indigenous	LC	NE
Verbenaceae	<i>Lantana rugosa</i>	Indigenous	LC	NE
Verbenaceae	<i>Duranta erecta</i>	Not indigenous; Naturalised; Invasive	NE	LC
Verbenaceae	<i>Chascanum hederaceum</i>	Indigenous	LC	NE

5.3.2 Expected Mammal Species

Family	Taxon	Conservation Status	
		Local	Global
Muridae	<i>Aethomys namaquensis</i>	LC	LC
Bovidae	<i>Antidorcas marsupialis</i>	LC	LC
Canidae	<i>Canis mesomelas</i>	LC	LC
Felidae	<i>Caracal caracal</i>	LC	LC
Chrysochloridae	<i>Chrysochloris (Chrysochloris) asiatica</i>	LC	LC
Chrysochloridae	<i>Chrysochloris sp.</i>	LC	LC
Vespertilionidae	<i>Cistugo seabrae</i>	LC	NT
Soricidae	<i>Crocidura cyanea</i>	LC	LC
Bathyergidae	<i>Cryptomys hottentotus</i>	LC	LC
Herpestidae	<i>Cynictis penicillata</i>	LC	LC
Muridae	<i>Desmodillus auricularis</i>	LC	LC
Pteropodidae	<i>Eidolon helvum</i>	LC	NT
Macroscelididae	<i>Elephantulus edwardii</i>	LC	LC
Macroscelididae	<i>Elephantulus rupestris</i>	LC	LC
Vespertilionidae	<i>Eptesicus hottentotus</i>	LC	LC
Felidae	<i>Felis nigripes</i>	VU	VU
Felidae	<i>Felis silvestris</i>	LC	LC
Viverridae	<i>Genetta genetta</i>	LC	LC
Muridae	<i>Gerbilliscus brantsii</i>	LC	LC
Muridae	<i>Gerbilliscus paeaba</i>	LC	LC
Muridae	<i>Gerbillurus paeaba</i>	LC	Unlisted
Muridae	<i>Gerbillurus vullinus</i>	LC	Unlisted
Gliridae	<i>Graphiurus (Graphiurus) oculus</i>	LC	LC
Gliridae	<i>Graphiurus rupicola</i>	NT	LC
Herpestidae	<i>Herpestes pulverulentus</i>	LC	LC
Hystriidae	<i>Hystrix africae australis</i>	LC	LC
Mustelidae	<i>Ictonyx striatus</i>	LC	LC
Leporidae	<i>Lepus capensis</i>	LC	LC
Leporidae	<i>Lepus saxatilis</i>	LC	LC
Macroscelididae	<i>Macroscelides proboscideus</i>	LC	LC
Nesomyidae	<i>Malacothrix typica</i>	LC	LC
Mustelidae	<i>Mellivora capensis</i>	LC	LC
Muridae	<i>Mus (Nannomys) minutoides</i>	LC	LC
Muridae	<i>Mus musculus</i>	Unlisted	LC
Muridae	<i>Mus musculus musculus</i>	Unlisted	LC
Soricidae	<i>Myosorex varius</i>	LC	LC

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Vespertilionidae	<i>Neoromicia capensis</i>	LC	LC
Nycteridae	<i>Nycteris thebaica</i>	LC	LC
Bovidae	<i>Oreotragus oreotragus</i>	LC	LC
Orycteropodidae	<i>Orycteropus afer</i>	LC	LC
Canidae	<i>Otocyon megalotis</i>	LC	LC
Muridae	<i>Otomys unisulcatus</i>	LC	LC
Felidae	<i>Panthera pardus</i>	VU	VU
Cercopithecidae	<i>Papio ursinus</i>	LC	LC
Muridae	<i>Parotomys brantsii</i>	LC	LC
Muridae	<i>Parotomys littledalei</i>	NT	LC
Pedetidae	<i>Pedetes capensis</i>	LC	LC
Petromuridae	<i>Petromus typicus</i>	LC	LC
Nesomyidae	<i>Petromyscus barbouri</i>	LC	LC
Nesomyidae	<i>Petromyscus collinus</i>	LC	LC
Nesomyidae	<i>Petromyscus monticularis</i>	LC	LC
Procaviidae	<i>Procavia capensis</i>	LC	LC
Procaviidae	<i>Procavia capensis capensis</i>	LC	LC
Leporidae	<i>Pronolagus crassicaudatus</i>	LC	LC
Leporidae	<i>Pronolagus rupestris</i>	LC	LC
Hyaenidae	<i>Proteles cristata</i>	LC	LC
Muridae	<i>Rhabdomys pumilio</i>	LC	LC
Rhinolophidae	<i>Rhinolophus capensis</i>	LC	LC
Rhinolophidae	<i>Rhinolophus clivosus</i>	LC	LC
Rhinolophidae	<i>Rhinolophus damarensis</i>	LC	LC
Rhinolophidae	<i>Rhinolophus darlingi</i>	LC	LC
Molossidae	<i>Sauromys petrophilus</i>	LC	LC
Soricidae	<i>Suncus varilla</i>	LC	LC
Herpestidae	<i>Suricata suricatta</i>	LC	LC
Bovidae	<i>Sylvicapra grimmia</i>	LC	LC
Molossidae	<i>Tadarida aegyptiaca</i>	LC	LC
Muridae	<i>Thallomys paedulcus</i>	LC	LC
Muridae	<i>Thallomys shortridgei</i>	DD	DD
Canidae	<i>Vulpes chama</i>	LC	LC
Sciuridae	<i>Xerus inauris</i>	LC	LC

5.3.3 Expected Reptile Species

Family	Taxon	Conservation Status	
		Local	Global
Scincidae	<i>Acontias lineatus</i>	LC	LC
Scincidae	<i>Acontias namaquensis</i>	LC	LC
Scincidae	<i>Acontias tristis</i>	LC	LC
Agamidae	<i>Agama aculeata aculeata</i>	LC	Unlisted
Agamidae	<i>Agama atra</i>	LC	LC
Agamidae	<i>Agama hispida</i>	LC	LC
Agamidae	<i>Agama knobeli</i>	LC	LC
Elapidae	<i>Aspidelaps lubricus lubricus</i>	LC	Unlisted
Viperidae	<i>Bitis arietans arietans</i>	LC	Unlisted
Lamprophiidae	<i>Boaedon capensis</i>	LC	LC
Lamprophiidae	<i>Boaedon mentalis</i>	LC	Unlisted
Chamaeleonidae	<i>Chamaeleo namaquensis</i>	LC	LC
Testudinidae	<i>Chersina angulata</i>	LC	LC
Testudinidae	<i>Chersobius signatus</i>	EN	EN
Gekkonidae	<i>Chondrodactylus angulifer</i>	LC	LC
Gekkonidae	<i>Chondrodactylus bibronii</i>	LC	Unlisted
Gekkonidae	<i>Chondrodactylus laevigatus</i>	Unlisted	LC
Gerrhosauridae	<i>Cordylus subcaeruleus</i>	LC	LC
Colubridae	<i>Dasypeltis scabra</i>	LC	LC
Colubridae	<i>Dipsosaaurus multimaculatus</i>	LC	Unlisted
Gekkonidae	<i>Goggia lineata</i>	LC	LC
Gekkonidae	<i>Goggia rupicola</i>	LC	LC
Cordylidae	<i>Karusasaurus polyzonus</i>	LC	LC
Lamprophiidae	<i>Lamprophis fiskii</i>	Unlisted	LC
Lamprophiidae	<i>Lamprophis guttatus</i>	LC	LC
Lacertidae	<i>Meroles knoxii</i>	LC	LC
Lacertidae	<i>Meroles suborbitalis</i>	LC	Unlisted
Elapidae	<i>Naja nigricincta woodi</i>	LC	Unlisted
Elapidae	<i>Naja nivea</i>	LC	Unlisted
Cordylidae	<i>Namazonurus peersi</i>	LC	LC
Lacertidae	<i>Nucras tessellata</i>	LC	Unlisted
Gekkonidae	<i>Pachydactylus atorquatus</i>	Unlisted	LC
Gekkonidae	<i>Pachydactylus capensis</i>	LC	Unlisted
Gekkonidae	<i>Pachydactylus latirostris</i>	LC	Unlisted
Gekkonidae	<i>Pachydactylus montanus</i>	LC	LC
Gekkonidae	<i>Pachydactylus namaquensis</i>	LC	LC

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Gekkonidae	<i>Pachydactylus rugosus</i>	LC	Unlisted
Gekkonidae	<i>Pachydactylus weberi</i>	LC	LC
Lacertidae	<i>Pedioplanis inornata</i>	LC	Unlisted
Lacertidae	<i>Pedioplanis lineoocellata lineoocellata</i>	LC	Unlisted
Lacertidae	<i>Pedioplanis lineoocellata pulchella</i>	LC	LC
Lacertidae	<i>Pedioplanis namaquensis</i>	LC	Unlisted
Colubridae	<i>Philothamnus semivariegatus</i>	LC	Unlisted
Cordylidae	<i>Platysaurus capensis</i>	LC	LC
Lamprophiidae	<i>Prosymna bivittata</i>	LC	Unlisted
Lamprophiidae	<i>Prosymna frontalis</i>	LC	Unlisted
Testudinidae	<i>Psammobates tentorius verroxii</i>	NT	LC
Lamprophiidae	<i>Psammophis leightoni</i>	LC	LC
Lamprophiidae	<i>Psammophis notostictus</i>	LC	Unlisted
Lamprophiidae	<i>Pseudaspis cana</i>	LC	Unlisted
Gekkonidae	<i>Ptenopus garrulus maculatus</i>	LC	Unlisted
Typhlopidae	<i>Rhinotyphlops lalandei</i>	LC	Unlisted
Typhlopidae	<i>Rhinotyphlops schinzi</i>	LC	Unlisted
Colubridae	<i>Telescopus beetzi</i>	LC	LC
Colubridae	<i>Telescopus semiannulatus polystictus</i>	LC	Unlisted
Scincidae	<i>Trachylepis occidentalis</i>	LC	Unlisted
Scincidae	<i>Trachylepis sulcata</i>	LC	Unlisted
Scincidae	<i>Trachylepis sulcata sulcata</i>	LC	Unlisted
Scincidae	<i>Trachylepis variegata</i>	LC	Unlisted

5.3.4 Expected Amphibian Species

Family	Taxon	Conservation Status	
		Local	Global
Pyxicephalidae	<i>Amietia fuscigula</i>	LC	Unlisted
Pyxicephalidae	<i>Cacosternum namaquense</i>	LC	LC
Microhylidae	<i>Phrynomantis annectens</i>	LC	LC
Pyxicephalidae	<i>Strongylopus grayii</i>	LC	LC
Pyxicephalidae	<i>Tomopterna delalandii</i>	LC	LC
Bufonidae	<i>Vandijkophrynus gariensis gariensis</i>	Not listed	Not listed
Bufonidae	<i>Vandijkophrynus robinsoni</i>	LC	LC
Pipidae	<i>Xenopus laevis</i>	LC	LC

5.3.5 Expected Avifauna Species

Common Name	Scientific Name	Family Name	Endemism in South Africa (E)	Regional	Global
Abdim's Stork	<i>Ciconia abdimii</i>	Ciconiidae			
Acacia Pied Barbet	<i>Tricholaema leucomelas</i>	Lybiidae			
African Crake	<i>Crecopsis egregia</i>	Rallidae			
African Darter	<i>Anhinga rufa</i>	Anhingidae		NT	LC
African Firefinch	<i>Lagonosticta rubricata</i>	Estrididae			
African Harrier-Hawk	<i>Polyboroides typus</i>	Accipitridae			
African Hawk Eagle	<i>Aquila spilogaster</i>	Accipitridae			
African Hoopoe	<i>Upupa africana</i>	Upupidae			
African Jacana	<i>Actophilornis africanus</i>	Jacanidae			
African Pipit	<i>Anthus cinnamomeus</i>	Motacillidae			
African Rail	<i>Rallus caerulescens</i>	Rallidae			
African Snipe	<i>Gallinago nigripennis</i>	Scolopacidae			
African Spoonbill	<i>Platalea alba</i>	Threskiornithidae			
African Stonechat	<i>Saxicola torquatus</i>	Muscicapidae			
African Swamphen	<i>Porphyrio madagascariensis</i>	Rallidae			
African Black Duck	<i>Anas sparsa</i>	Anatidae			
African Black Swift	<i>Apus barbatus</i>	Apodidae			
African Fish Eagle	<i>Haliaeetus vocifer</i>	Accipitridae			
African Grass Owl	<i>Tyto capensis</i>	Strigidae		VU	LC
African Green Pigeon	<i>Treron calvus</i>	Columbidae			
African Grey Hornbill	<i>Lophoceros nasutus</i>	Bucerotidae			
African Marsh Harrier	<i>Circus ranivorus</i>	Accipitridae		VU	LC
African Olive Pigeon	<i>Columba arquatrix</i>	Columbidae			
African Palm Swift	<i>Cypsiurus parvus</i>	Apodidae			
African Paradise Flycatcher	<i>Terpsiphone viridis</i>	Monarchidae			
African Red-eyed Bulbul	<i>Pycnonotus nigricans</i>	Pycnonotidae			
African Sacred Ibis	<i>Threskiornis aethiopicus</i>	Threskiornithidae			
African Wattled Lapwing	<i>Vanellus senegallus</i>	Charadriidae			
Alpine Swift	<i>Tachymarptis melba</i>	Apodidae			
Amethyst Sunbird	<i>Chalcomitra amethystina</i>	Nectariniidae			
Amur Falcon	<i>Falco amurensis</i>	Falconidae			
Ant-eating Chat	<i>Myrmecocichla formicivora</i>	Muscicapidae			
Arrow-marked Babbler	<i>Turdoides jardineii</i>	Leiothrichidae			
Ashy Tit	<i>Melaniparus cinerascens</i>	Paridae			
Banded Martin	<i>Riparia cincta</i>	Hirundinidae			
Barn Swallow	<i>Hirundo rustica</i>	Hirundinidae			

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Bar-throated Apalis	<i>Apalis thoracica</i>	Cisticolidae			
Black Crane	<i>Zapornia flavirostra</i>	Rallidae			
Black Cuckoo	<i>Cuculus clamosus</i>	Cuculidae			
Black Cuckooshrike	<i>Campephaga flava</i>	Campephagidae			
Black Harrier	<i>Circus maurus</i>	Accipitridae	NE	EN	EN
Black Heron	<i>Egretta ardesiaca</i>	Ardeidae			
Black Sparrowhawk	<i>Accipiter melanoleucus</i>	Accipitridae			
Black-backed Puffback	<i>Dryoscopus cubla</i>	Malaconotidae			
Black-chested Prinia	<i>Prinia flavicans</i>	Cisticolidae			
Black-chested Snake Eagle	<i>Circaetus pectoralis</i>	Accipitridae			
Black-collared Barbet	<i>Lybius torquatus</i>	Lybiidae			
Black-crowned Tchagra	<i>Tchagra senegalus</i>	Malaconotidae			
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Ardeidae		NT	LC
Black-faced Waxbill	<i>Brunhilda erythronotos</i>	Estrildidae			
Black-headed Heron	<i>Ardea melanocephala</i>	Ardeidae			
Black-headed Oriole	<i>Oriolus larvatus</i>	Oriolidae			
Blacksmith Lapwing	<i>Vanellus armatus</i>	Charadriidae			
Black-throated Canary	<i>Crithagra atrogularis</i>	Fringillidae			
Black-winged Kite	<i>Elanus caeruleus</i>	Accipitridae		NT	LC
Black-winged Pratincole	<i>Glareola nordmanni</i>	Glareolidae		LC	NT
Black-winged Stilt	<i>Himantopus himantopus</i>	Recurvirostridae			
Blue Waxbill	<i>Uraeginthus angolensis</i>	Estrildidae			
Blue-billed Teal	<i>Spatula hottentota</i>	Anatidae			
Bokmakierie	<i>Telophorus zeylonus</i>	Malaconotidae			
Booted Eagle	<i>Hieraaetus pennatus</i>	Accipitridae			
Bronze Mannikin	<i>Spermestes cucullata</i>	Estrildidae			
Brown Snake Eagle	<i>Circaetus cinereus</i>	Accipitridae			
Brown-backed Honeybird	<i>Prodotiscus regulus</i>	Indicatoridae			
Brown-crowned Tchagra	<i>Tchagra australis</i>	Malaconotidae			
Brown-hooded Kingfisher	<i>Halcyon albiventris</i>	Alcedinidae			
Brown-throated Martin	<i>Riparia paludicola</i>	Hirundinidae			
Brubru	<i>Nilaus afer</i>	Malaconotidae			
Buffy Pipit	<i>Anthus vaalensis</i>	Motacillidae			
Burchell's Coucal	<i>Centropus burchellii</i>	Cuculidae			
Cape Bunting	<i>Emberiza capensis</i>	Emberizidae			
Cape Grassbird	<i>Sphenoeacus afer</i>	Macrosphenidae	NE		
Cape Longclaw	<i>Macronyx capensis</i>	Motacillidae			
Cape Robin-Chat	<i>Cossypha caffra</i>	Muscicapidae			
Cape Shoveler	<i>Spatula smithii</i>	Anatidae		NT	LC

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Cape Sparrow	<i>Passer melanurus</i>	Passeridae		
Cape Starling	<i>Lamprotornis nitens</i>	Sturnidae		
Cape Teal	<i>Anas capensis</i>	Anatidae		
Cape Vulture	<i>Gyps coprotheres</i>	Accipitridae	VU	VU
Cape Wagtail	<i>Motacilla capensis</i>	Motacillidae		
Cape Weaver	<i>Ploceus capensis</i>	Ploceidae	NE	
Cape White-eye	<i>Zosterops virens</i>	Zosteropidae	NE	
Cape Penduline Tit	<i>Anthoscopus minutus</i>	Remizidae		
Capped Wheatear	<i>Oenanthe pileata</i>	Muscicapidae		
Cardinal Woodpecker	<i>Dendropicos fuscescens</i>	Picidae		
Chestnut-backed Sparrow-Lark	<i>Eremopterix leucotis</i>	Alaudidae		
Chestnut-vented Warbler	<i>Curruca subcoerulea</i>	Sylviidae		
Chinspot Batis	<i>Batis molitor</i>	Platysteiridae		
Cinnamon-breasted Bunting	<i>Emberiza tahapisi</i>	Emberizidae		
Cloud Cisticola	<i>Cisticola textrix</i>	Cisticolidae	NE	
Common Buzzard	<i>Buteo buteo</i>	Accipitridae		
Common Greenshank	<i>Tringa nebularia</i>	Pycnonotidae		
Common Moorhen	<i>Gallinula chloropus</i>	Rallidae		
Common Myna	<i>Acridotheres tristis</i>	Sturnidae		
Common Ostrich	<i>Struthio camelus</i>	Struthionidae		
Common Quail	<i>Coturnix coturnix</i>	Phasianidae		
Common Sandpiper	<i>Actitis hypoleucos</i>	Scolopacidae		
Common Scimitarbill	<i>Rhinopomastus cyanomelas</i>	Phoeniculidae		
Common Swift	<i>Apus apus</i>	Apodidae		
Common Waxbill	<i>Estrilda astrild</i>	Estrildidae		
Common Whitethroat	<i>Curruca communis</i>	Sylviidae		
Common House Martin	<i>Delichon urbicum</i>	Hirundinidae		
Common Reed Warbler	<i>Acrocephalus baeticatus</i>	Acrocephalidae		
Common Reed Warbler	<i>Acrocephalus baeticatus</i>	Acrocephalidae		
Coqui Francolin	<i>Peliperdix coqui</i>	Phasianidae		
Crested Barbet	<i>Trachyphonus vaillantii</i>	Lybiidae		
Crimson-breasted Shrike	<i>Laniarius atrococcineus</i>	Malaconotidae		
Crowned Lapwing	<i>Vanellus coronatus</i>	Charadriidae		
Cuckoo Finch	<i>Anomalospiza imberbis</i>	Viduidae		
Curlew Sandpiper	<i>Calidris ferruginea</i>	Scolopacidae	VU	VU
Cut-throat Finch	<i>Amadina fasciata</i>	Estrildidae		
Dark-capped Bulbul	<i>Pycnonotus tricolor</i>	Pycnonotidae		
Dark-capped Yellow Warbler	<i>Iduna natalensis</i>	Acrocephalidae		
Desert Cisticola	<i>Cisticola aridulus</i>	Cisticolidae		

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Diederik Cuckoo	<i>Chrysococcyx caprius</i>	Cuculidae		
Dusky Indigobird	<i>Vidua funerea</i>	Viduidae		
Eastern Clapper Lark	<i>Mirafrja fasciolata</i>	Alaudidae		
Eastern Long-billed Lark	<i>Certhilauda semitorquata</i>	Alaudidae	SLS	
Egyptian Goose	<i>Alopochen aegyptiaca</i>	Anatidae		
European Bee-eater	<i>Merops apiaster</i>	Meropidae		
European Honey Buzzard	<i>Pernis apivorus</i>	Accipitridae		
European Roller	<i>Coracias garrulus</i>	Coraciidae	NT	LC
Fairy Flycatcher	<i>Stenostira scita</i>	Muscicapidae	NE	
Familiar Chat	<i>Oenanthe familiaris</i>	Muscicapidae		
Fiery-necked Nightjar	<i>Caprimulgus pectoralis</i>	Caprimulgidae		
Fiscal Flycatcher	<i>Melaenornis silens</i>	Muscicapidae	NE	
Fulvous Whistling Duck	<i>Dendrocygna bicolor</i>	Anatidae	NT	LC
Gabar Goshawk	<i>Micronisus gabar</i>	Accipitridae		
Garden Warbler	<i>Sylvia borin</i>	Sylviidae		
Giant Kingfisher	<i>Megaceryle maxima</i>	Alcedinidae		
Glossy Ibis	<i>Plegadis falcinellus</i>	Threskiornithidae		
Golden-breasted Bunting	<i>Emberiza flaviventris</i>	Emberizidae		
Golden-tailed Woodpecker	<i>Campethera abingoni</i>	Picidae		
Goliath Heron	<i>Ardea goliath</i>	Ardeidae		
Great Egret	<i>Ardea alba</i>	Ardeidae	NT	LC
Great Crested Grebe	<i>Podiceps cristatus</i>	Podicipedidae	VU	LC
Great Reed Warbler	<i>Acrocephalus arundinaceus</i>	Acrocephalidae		
Great Spotted Cuckoo	<i>Clamator glandarius</i>	Cuculidae		
Greater Flamingo	<i>Phoenicopterus roseus</i>	Phoenicopteridae	NT	LC
Greater Honeyguide	<i>Indicator indicator</i>	Indicatoridae		
Greater Kestrel	<i>Falco rupicoloides</i>	Falconidae		
Greater Painted-snipe	<i>Rostratula benghalensis</i>	Rostratulidae		
Greater Double-collared Sunbird	<i>Cinnyris afer</i>	Nectariniidae	SLS	
Greater Striped Swallow	<i>Cecropis cucullata</i>	Hirundinidae		
Green Wood Hoopoe	<i>Phoeniculus purpureus</i>	Phoeniculidae		
Green-winged Pytilia	<i>Pytilia melba</i>	Estrildidae		
Grey Go-away-bird	<i>Corythaixoides concolor</i>	Musophagidae		
Grey Heron	<i>Ardea cinerea</i>	Ardeidae		
Grey-headed Bush-Shrike	<i>Malaconotus blanchoti</i>	Malaconotidae		
Grey-headed Gull	<i>Chroicocephalus cirrocephalus</i>	Laridae		
Groundscraper Thrush	<i>Turdus litsitsirupa</i>	Turdidae		
Hadada Ibis	<i>Bostrychia hagedash</i>	Threskiornithidae		
Hamerkop	<i>Scopus umbretta</i>	Scopidae	NT	LC

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Helmeted Guineafowl	<i>Numida meleagris</i>	Numididae		
Horus Swift	<i>Apus horus</i>	Apodidae		
House Sparrow	<i>Passer domesticus</i>	Passeridae		
Icterine Warbler	<i>Hippolais icterina</i>	Acrocephalidae		
Indian Peafowl	<i>Pavo cristatus</i>	Phasianidae		
Jackal Buzzard	<i>Buteo rufofuscus</i>	Accipitridae	NE	
Jacobin Cuckoo	<i>Clamator jacobinus</i>	Cuculidae		
Jameson's Firefinch	<i>Lagonosticta rhodopareia</i>	Estrididae		
Kalahari Scrub Robin	<i>Cercotrichas paena</i>	Muscicapidae		
Karoo Thrush	<i>Turdus smithi</i>	Turdidae	NE	
Kittlitz's Plover	<i>Charadrius pecuarius</i>	Charadriidae	NT	LC
Klaas's Cuckoo	<i>Chrysococcyx klaas</i>	Cuculidae		
Knob-billed Duck	<i>Sarkidiornis melanotos</i>	Anatidae	NT	LC
Kurrichane Buttonquail	<i>Turnix sylvaticus</i>	Turnicidae		
Kurrichane Thrush	<i>Turdus libonyana</i>	Turdidae		
Lanner Falcon	<i>Falco biarmicus</i>	Falconidae	NT	LC
Lark-like Bunting	<i>Emberiza impetuanii</i>	Emberizidae		
Laughing Dove	<i>Spilopelia senegalensis</i>	Columbidae		
Lazy Cisticola	<i>Cisticola aberrans</i>	Cisticolidae		
Lesser Flamingo	<i>Phoeniconaias minor</i>	Phoenicopteridae	VU	NT
Lesser Honeyguide	<i>Indicator minor</i>	Indicatoridae		
Lesser Kestrel	<i>Falco naumanni</i>	Falconidae	VU	LC
Lesser Grey Shrike	<i>Lanius minor</i>	Laniidae		
Lesser Striped Swallow	<i>Cecropis abyssinica</i>	Hirundinidae		
Lesser Swamp Warbler	<i>Acrocephalus gracilirostris</i>	Acrocephalidae		
Levaillant's Cisticola	<i>Cisticola tinniens</i>	Cisticolidae		
Lilac-breasted Roller	<i>Coracias caudatus</i>	Coraciidae		
Little Bee-eater	<i>Merops pusillus</i>	Meropidae		
Little Bittern	<i>Ixobrychus minutus</i>	Ardeidae		
Little Egret	<i>Egretta garzetta</i>	Ardeidae		
Little Grebe	<i>Tachybaptus ruficollis</i>	Podicipedidae		
Little Sparrowhawk	<i>Accipiter minullus</i>	Accipitridae		
Little Stint	<i>Calidris minuta</i>	Scolopacidae		
Little Swift	<i>Apus affinis</i>	Apodidae		
Little Rush Warbler	<i>Bradypterus baboecala</i>	Locustellidae		
Long-billed Crombec	<i>Sylvietta rufescens</i>	Macrosphenidae		
Long-crested Eagle	<i>Lophaetus occipitalis</i>	Accipitridae		
Long-tailed Widowbird	<i>Euplectes progne</i>	Ploceidae		
Long-tailed Paradise Whydah	<i>Vidua paradisaea</i>	Viduidae		

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Maccoa Duck	<i>Oxyura maccoa</i>	Anatidae	VU	EN
Malachite Kingfisher	<i>Corythornis cristatus</i>	Alcedinidae		
Malachite Sunbird	<i>Nectarinia famosa</i>	Nectariniidae		
Mallard	<i>Anas platyrhynchos</i>	Anatidae		
Marico Flycatcher	<i>Melaenornis mariquensis</i>	Muscicapidae		
Marsh Owl	<i>Asio capensis</i>	Strigidae	NT	LC
Marsh Sandpiper	<i>Tringa stagnatilis</i>	Scolopacidae		
Marsh Warbler	<i>Acrocephalus palustris</i>	Acrocephalidae		
Melodious Lark	<i>Mirafraga cheniana</i>	Alaudidae	NE	NT
Mocking Cliff Chat	<i>Thamnolaea cinnamomeiventris</i>	Muscicapidae		LC
Mountain Wheatear	<i>Myrmecocichla monticola</i>	Muscicapidae		
Namaqua Dove	<i>Oena capensis</i>	Columbidae		
Natal Spurrow	<i>Pternistis natalensis</i>	Phasianidae		
Neddicky	<i>Cisticola fulvicapilla</i>	Cisticolidae		
Nicholson's Pipit	<i>Anthus nicholsoni</i>	Motacillidae		
Northern Black Korhaan	<i>Afrotis afraoides</i>	Otididae		
Orange River Francolin	<i>Scleroptila gutturalis</i>	Phasianidae		
Orange River White-eye	<i>Zosterops pallidus</i>	Zosteropidae		
Orange-breasted Bush-Shrike	<i>Chlorophoneus sulfureopectus</i>	Malaconotidae		
Orange-breasted Waxbill	<i>Amandava subflava</i>	Estrildidae		
Ovambo Sparrowhawk	<i>Accipiter ovampensis</i>	Accipitridae		
Pale Chanting Goshawk	<i>Melierax canorus</i>	Accipitridae		
Pearl-breasted Swallow	<i>Hirundo dimidiata</i>	Hirundinidae		
Peregrine Falcon	<i>Falco peregrinus</i>	Falconidae		
Pied Avocet	<i>Recurvirostra avosetta</i>	Recurvirostridae		
Pied Crow	<i>Corvus albus</i>	Corvidae		
Pied Kingfisher	<i>Ceryle rudis</i>	Alcedinidae		
Pied Starling	<i>Lamprolaima bicolor</i>	Sturnidae	SLS	
Pink-billed Lark	<i>Spizocorys conirostris</i>	Alaudidae		
Pin-tailed Whydah	<i>Vidua macroura</i>	Viduidae		
Plain-backed Pipit	<i>Anthus leucophrys</i>	Motacillidae		
Pirit Batis	<i>Batis pririt</i>	Platysteiridae		
Purple Heron	<i>Ardea purpurea</i>	Ardeidae		
Purple Indigobird	<i>Vidua purpurascens</i>	Viduidae		
Quailfinch	<i>Ortygospiza atricollis</i>	Estrildidae		
Rattling Cisticola	<i>Cisticola chiniana</i>	Cisticolidae		
Red-backed Shrike	<i>Lanius collurio</i>	Laniidae		
Red-billed Firefinch	<i>Lagonosticta senegala</i>	Estrildidae		
Red-billed Quelea	<i>Quelea quelea</i>	Ploceidae		

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Red-billed Teal	<i>Anas erythrorhyncha</i>	Anatidae	NT	LC
Red-breasted Swallow	<i>Cecropis semirufa</i>	Hirundinidae		
Red-capped Lark	<i>Calandrella cinerea</i>	Alaudidae		
Red-chested Cuckoo	<i>Cuculus solitarius</i>	Cuculidae		
Red-chested Flufftail	<i>Sarothrura rufa</i>	Sarothruridae		
Red-collared Widowbird	<i>Euplectes ardens</i>	Ploceidae		
Red-eyed Dove	<i>Streptopelia semitorquata</i>	Columbidae		
Red-faced Mousebird	<i>Urocolius indicus</i>	Coliidae		
Red-headed Finch	<i>Amadina erythrocephala</i>	Estrididae		
Red-knobbed Coot	<i>Fulica cristata</i>	Rallidae		
Red-throated Wryneck	<i>Jynx ruficollis</i>	Picidae		
Red-winged Starling	<i>Onychognathus morio</i>	Sturnidae		
Reed Cormorant	<i>Microcarbo africanus</i>	Phalacrocoracidae		
Ring-necked Dove	<i>Streptopelia capicola</i>	Columbidae		
Rock Dove	<i>Columba livia</i>	Columbidae		
Rock Kestrel	<i>Falco rupicolus</i>	Falconidae		
Rock Martin	<i>Ptyonoprogne fuligula</i>	Hirundinidae		
Rose-ringed Parakeet	<i>Psittacula krameri</i>	Psittaculidae		
Ruff	<i>Calidris pugnax</i>	Scolopacidae		
Rufous-cheeked Nightjar	<i>Caprimulgus rufigena</i>	Caprimulgidae		
Rufous-naped Lark	<i>Mirafrica africana</i>	Alaudidae		
Sabota Lark	<i>Calendulauda sabota</i>	Alaudidae		
Scaly-feathered Weaver	<i>Sporopipes squamifrons</i>	Ploceidae		
Secretarybird	<i>Sagittarius serpentarius</i>	Sagittariidae	VU	EN
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	Acrocephalidae		
Shaft-tailed Whydah	<i>Vidua regia</i>	Viduidae		
Shikra	<i>Accipiter badius</i>	Accipitridae		
Short-toed Rock Thrush	<i>Monticola brevipes</i>	Muscicapidae		
Sickle-winged Chat	<i>Emarginata sinuata</i>	Muscicapidae	NE	
South African Shelduck	<i>Tadorna cana</i>	Anatidae		
South African Cliff Swallow	<i>Petrochelidon spilodera</i>	Hirundinidae	BNE	
Southern Boubou	<i>Laniarius ferrugineus</i>	Malaconotidae		
Southern Fiscal	<i>Lanius collaris</i>	Laniidae		
Southern Pochard	<i>Netta erythrophthalma</i>	Anatidae	NT	LC
Southern Grey-headed Sparrow	<i>Passer diffusus</i>	Passeridae		
Southern Masked Weaver	<i>Ploceus velatus</i>	Ploceidae		
Southern Pied Babbler	<i>Turdoides bicolor</i>	Leiotherichidae		
Southern Red Bishop	<i>Euplectes orix</i>	Ploceidae		
Speckled Mousebird	<i>Colius striatus</i>	Coliidae		

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Speckled Pigeon	<i>Columba guinea</i>	Columbidae
Spike-heeled Lark	<i>Chersomanes albofasciata</i>	Alaudidae
Spotted Eagle-Owl	<i>Bubo africanus</i>	Strigidae
Spotted Flycatcher	<i>Muscicapa striata</i>	Muscicapidae
Spotted Thick-knee	<i>Burhinus capensis</i>	Burhinidae
Spur-winged Goose	<i>Plectropterus gambensis</i>	Anatidae
Squacco Heron	<i>Ardeola ralloides</i>	Ardeidae
Streaky-headed Seedeater	<i>Crithagra gularis</i>	Fringillidae

5.4 Appendix D: Specialist Declaration of Independence

I, Carami Burger, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.



Carami Burger

Ecologist

The Biodiversity Company

July 2025

I, Martinus Erasmus, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.



Martinus Erasmus

Terrestrial Ecologist

The Biodiversity Company

July 2025

5.5 Appendix E: Specialist CVs

Carami Burger

B.Sc. Honours – Ecological Interactions and
Ecosystem Resilience (Cum Laude)

(Pr Sci Nat)

Cell: +27 83 630 9077

Email: Carami@thebiodiversitycompany.com

Identity Number: 9606250185084

Date of birth: 25 June 1996



Profile Summary

Working experience in South Africa and Mozambique.

Specialist experience with infrastructure development, road development, renewable energy, mining and prospecting.

Specialist expertise include terrestrial ecology, wetland resources, rehabilitation and management plans, environmental compliance and monitoring.

Areas of Interest

Renewable Energy & Bulk Services Infrastructure Development, Mining, Farming, Sustainability and Conservation.

Key Experience

- Environmental Impact Assessments (EIA)
- Basic Assessments
- Terrestrial Ecological Assessments
- Wetland Delineation and Ecological Assessments
- Environmental Management Programmes (EMPr)
- Rehabilitation Plans
- Invasive Species Plans
- Search and Rescue Plans
- Environmental Compliance Audits
- Water Use License Applications
- Dust Fallout Monitoring
- Water Quality Monitoring

Countries worked in

South Africa
Mozambique
Zambia
Angola
Sierra Leone

Nationality

South African

Languages

English – Proficient

Afrikaans – Proficient

Qualifications

- BSc Hons Ecological Interactions and Ecosystem Resilience.
- BSc Botany and Zoology.
- Pr Sci Nat (121757)

Martinus Erasmus

B-Tech Nature Conservation (*Pr Sci Nat*)

Cell: +27 82 448 1667

Email: martinus@thebiodiversitycompany.com

Identity Number: 9209035136082

Date of birth: 03 September 1992



Profile Summary

Working experience throughout Southern Africa as well as West Africa.

Specialist experience in exploration, mining, engineering, hydropower, private sector, and renewable energy.

Specialist guidance, support, and facilitation for compliance with legislative processes, in-country requirements, and international lenders.

Specialist expertise includes Botany and Terrestrial Ecology.

Country Experience

Botswana

Eswatini

Guinea

Lesotho

Liberia

Mauritius

Mozambique

Nigeria

South Africa

Zambia

Zimbabwe

Key Experience

- Familiar with World Bank and the International Finance Corporation requirements
- Environmental, Social, and Health Impact Assessments (ESHIA)
- Environmental Management Programmes (EMP)
- Rehabilitation Plans and Monitoring
- Botany, especially in the Limpopo, Mpumalanga, Gauteng, and North-West provinces in South Africa.
- Terrestrial Ecological Assessments
- Veld management and Veld condition

Areas of Interest

Mining, Oil & Gas, Renewable Energy & Bulk Services Infrastructure Development, Sustainability, and Conservation

Nationality

South African

Languages

English – Proficient

Afrikaans – Proficient I

Qualifications

- B-Tech in Nature Conservation, Tshwane University of Technology, Pretoria, South Africa.
- National Diploma in Nature Conservation, Tshwane University of Technology, Pretoria, South Africa.
- Pr Sci Nat (118630)