



BIODIVERSITY IMPACT ASSESSMENT

FOR THE PROPOSED PROSPECTING RIGHT ON
PORTIONS 9,10,11,14,23,24,210, 211 AND 212 OF
FARM ROODEPOORT 504 JR WITHIN CITY OF
TSHWANE METROPOLITAN MUNICIPALITY IN
GAUTENG PROVINCE

2021



DOCUMENT CONTROL

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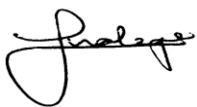
DECLARATION OF INDEPENDENCE

I, Mokgatla Molepo, in my capacity as a lead specialist consultant, hereby declare that I:

- Act/acted as an independent specialist to Jomela Consulting (Pty) Ltd for this project.
- Do not have any personal, business or financial interest in the project except for financial remuneration for specialist investigations completed in a professional capacity as specified by the Environmental Impact Assessment Regulations, 2017.
- Will not be affected by the outcome of the environmental process, of which this report forms part of.
- Do not have any influence over the decisions made by the governing authorities.
- Do not object to or endorse the proposed developments but aim to present facts and my best scientific and professional opinion regarding the impacts of the development.
- Undertake to disclose to the relevant authorities any information that has or may have the potential to influence its decision or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2017.

INDEMNITY

- This report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken.
- This report is based on a desktop investigation using available information and data related to the site to be affected, *in situ* fieldwork, surveys and assessments and the specialists best scientific and professional knowledge.
- The Precautionary Principle has been applied throughout this investigation.
- The findings, results, observations, conclusions and recommendations given in this report are based on the specialist's best scientific and professional knowledge as well as information available at the time of study.
- Additional information may become known or available during a later stage of the process for which no allowance could have been made at the time of this report.
- The specialist reserves the right to modify this report, recommendations and conclusions at any stage should additional information become available.
- Information and recommendations in this report cannot be applied to any other area without proper investigation.
- This report, in its entirety or any portion thereof, may not be altered in any manner or form or for any purpose without the specific and written consent of the specialist as specified above.
- Acceptance of this report, in any physical or digital form, serves to confirm acknowledgement of these terms and liabilities.



Mokgatla Molepo *Pr. Nat. Sci* (009509)

12 October 2021

1. BACKGROUND AND EXECUTIVE SUMMARY INFORMATION

MORA Ecological Services (Pty) Ltd was appointed by Jomela Consulting (Pty) to conduct a biodiversity impact assessment for the proposed prospecting right on portions 9,10,11,14,23,24,210, 211 and 212 of the Farm Roodepoort 504 JR within the magisterial district of Tshwane in Gauteng Province.

The site, which is referred to as the study site was investigated to determine potential impacts on the immediate natural environment. Survey methodology included a comprehensive desktop review, utilising available provincial ecological data, relevant literature, SANBI BGIS databases, topographical maps and aerial photography. This was then supplemented through a ground-truthing phase, where the site was visited during a field survey in October 2021. This allowed for the assessment of the habitat integrity and status of the vegetation units that were identified during the desktop review.

Floral features:

The vegetation type found within the proposed area is Rand Highveld Grassland. Due to current land uses, the grassland has been disturbed and there are high levels of alien infestation, mainly by Eucalyptus and White poplar.

Faunal features:

Due to the current scope of work and limited time spent on site, mammals were surveyed through indirect methods. From the short survey, no Species of Conservation Concern were observed. Their absence could be due to the presence of settlements that are spread out through the site.

Conclusions and Recommendations:

Majority of the habitats within the site have been severely transformed mainly by farming, alien invasion, human settlements and associated activities. During the exploration phase, all watercourses should be treated as no go areas and must be avoided. Overall, the project area has a low-medium ecological function due to current land use and previous disturbances. As a result, the proposed prospecting activities do not pose any high risk to the ecological integrity of the site. It is therefore the opinion of the specialist that the proposed prospecting right application be considered provided that all mitigations and recommendations are strictly followed.

2. TERMS OF REFERENCES

The study included the following activities:

- Provide a broad-scale map of the vegetation of the proposed site;
- A description of the dominant and characteristic species within the broad-scale plant communities;
- Provide a list of Red data plant and animal species previously recorded within the study site, and information obtained from the relevant authorities and literature reviews;
- Identification of sensitive habitats and plant communities;
- Preliminary investigation of the impacts of the project and the provision of recommended mitigation measures; and
- Recommend practical mitigation measures to minimize or eliminate negative impacts and or enhance potential project benefits.

3. INTRODUCTION AND PROJECT LOCATION AND DESCRIPTION

Mora Ecological (Pty) Ltd has been appointed by Jomela Consulting (Pty) Ltd to undertake the required Environmental Authorization process for the proposed coal prospecting rights on Farm Roodepoort located within City of Tshwane Metropolitan Municipality in Gauteng Province. (Fig. 1). The study site/proposed area lies approximately 50 km east of Pretoria. Land uses include residential, crop and livestock farming.

3.1. Objectives of this study

- To provide a description of the flora and fauna occurring around the proposed project area.
- To provide description of any threatened species occurring or likely to occur within the study area.
- To describe the available habitats on the study site including areas of important conservation value.

The investigation determined how the habitats and biota may be affected by the proposed activities on the site. The significance ratings of the anticipated impacts were evaluated, and recommendations and deductions were made.

3.2. Assumptions, Limitations, Uncertainties, and Gap analysis

- The findings, results, observations, conclusions and recommendations provided in this report are based on the author's best scientific and professional knowledge as

well as available information regarding the perceived impacts on terrestrial environment.

- A description of vegetation was based on the physical field surveys and site walkthrough and investigations as performed on site. Limited time was a constraint during field surveys.
- Results presented in this report are based on a snapshot investigation of the study site and not on detailed and long-term investigations of all environmental attributes and the varying degrees of biological diversity that may be present in the study site.
- The assessment of impacts and recommendation of mitigation measures were informed by the site-specific ecological issues arising from the field survey and based on the assessor's working knowledge and experience with similar projects.

4. SURVEY METHODS AND REPORTING

Climate

In Bronkhorstspuit, the climate is warm and temperate. In winter, there is much less rainfall in Bronkhorstspuit than in summer. The climate here is classified as Cwb by the Köppen-Geiger system. The average annual temperature in Bronkhorstspuit is 17.0 °C. The rainfall in this area is around 691 mm

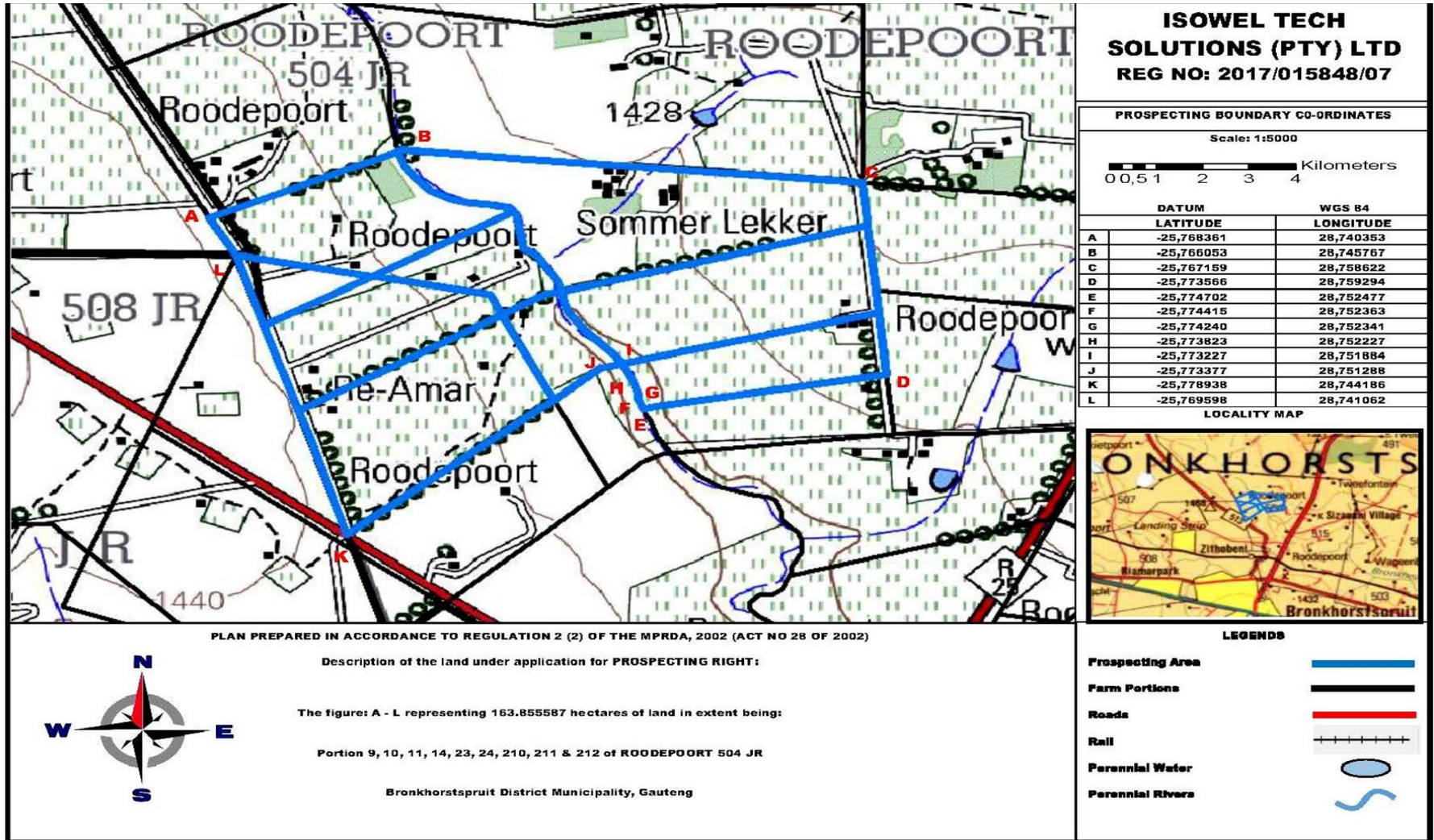


Figure 1: Location of the study site.

Biophysical Environment

Vegetation of the study site

The vegetation units of Mucina and Rutherford (2006) were used as references but where necessary communities are named according to the recommendations of a standardised South African Syntaxonomic nomenclature system. By combining the available literature with the survey results, stratification of vegetation communities was possible.

Selected sites within the area were also searched for important species and the potential for Red Data Listed (RDL) and other important species were established, and cross referenced with New Plants of South Africa (POSA) database. The aim was to identify distinct vegetation types and to establish their integrity and representation in the study area. The veld types are described on a local level. The study site is covered, predominantly by graminoids and woody species (mostly alien), with few shrubs. This type of vegetation has the potential to support a variety of faunal species including birds, but due to farming and human settlements, very few animals remain.

Vegetation types and biophysical descriptions

Vegetation units are broadly classed and may include several distinct vegetation communities within a unit. Vegetation type found within the study site is Rand Highveld Grassland (Fig. 2).

Distribution

This vegetation type is found in Gauteng, North-West, Free State and Mpumalanga Provinces: In areas between rocky ridges from Pretoria to Witbank, extending onto ridges in the Stoffberg and Roossenekal regions as well as west of Krugersdorp centred in the vicinity of Derby and Potchefstroom, extending southwards and northeastwards from there.

Vegetation & Landscape Features

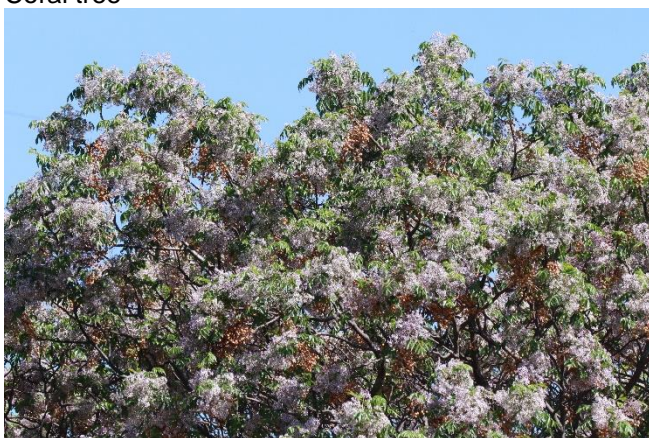
Highly variable landscape with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains. The vegetation is species-rich, wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes. Most common grasses on the plains belong to the genera *Themeda*, *Eragrostis*, *Heteropogon* and *Elionurus*. High diversity of herbs, many of which belong to the Asteraceae, is also a typical feature. Rocky hills and ridges carry sparse (savannoid) woodlands with *Protea caffra* subsp. *caffra*, *P. welwitschii*, *Acacia caffra* and *Celtis africana*, accompanied by a rich suite of shrubs among which the genus *Rhus* (especially *R. magalismonata*) is most prominent. Figure 3 shows some of the large trees occurring around the site and these are mainly alien trees.



Figure 2: Vegetation map of the study site.



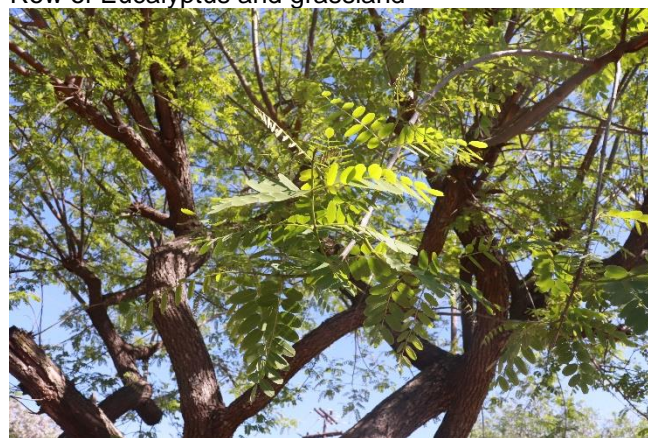
Coral tree



Seringa



Row of Eucalyptus and grassland



Black Locust tree

Figure 3: Typical trees around the study site.

5. LEGAL REQUIREMENTS

5.1. RELEVANT LEGISLATION

The Constitution of the Republic of South Africa Act (Act No. 108 of 1996) – Section 24.

The Constitution is South Africa's overarching law. It prescribes minimum standards with which existing and new laws must comply. Chapter 2 of the Constitution contains the Bill of Rights in which basic human rights are enshrined. Government's commitment to give effect to the environmental rights enshrined in the Constitution is evident from the enactment of various pieces of environmental legislation since 1996, including the National Water Act, the National Environmental Management Act, etc.

National Environmental Management Act (Act No. 107 of 1998) (NEMA), as amended.

NEMA replaces a number of the provisions of the Environment Conservation Act, 1989 (Act No. 73 of 1989). The Act provides for cooperative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for coordinating environmental functions. The principles enshrined in NEMA guide the interpretation, administration and implementation of the Act with regards to the protection and / or management of the environment. These principles serve as a framework within which environmental management must be formulated. Section 2(4) specifies that "sustainable development requires the consideration of all relevant factors including aspects specifically relevant to biodiversity":

National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA).

NEMBA provides for the management and conservation of biological diversity and components thereof; the use of indigenous biological resources in a sustainable manner; the fair and equitable sharing of benefits rising from bio-prospecting of biological resources; and cooperative governance in biodiversity management and conservation within the framework of NEMA.

National Water Act (Act No. 36 of 1998) (NWA).

The National Water Act (NWA) is a legal framework for the effective and sustainable management of water resources in South Africa. Central to the NWA is recognition that water is a scarce resource in the country which belongs to all the people of South Africa and needs to be managed in a sustainable manner to benefit all members of society. The NWA places a strong emphasis on the protection of water resources in South Africa, especially against its exploitation, and the insurance that there is water for social and economic development in the country for present and future generations.

The National Water Act, requires any development to secure Water Use Licences with the following activities:

Section 21 (a), abstractive use of water for construction (if possible and required).

Section 21 (c) and (i) use, i.e. river or wetland crossings, which includes any drainage lines by any infrastructure.

In terms of the definitions provided, activities included under Sections 21(c) and 21(i) are (amongst others) the construction of roads, bridges, pipelines, culverts and structures for slope stabilisation and erosion protection. DWS will however need to be approached to provide guidance on whether approval for Section 21 (c) and (i) water uses would be required.

GENERAL AUTHORISATION IN TERMS OF SECTION 39 OF THE NWA

According to the preamble to Part 6 of the NWA, “This Part established a procedure to enable a responsible authority, after public consultation, to permit the use of water by publishing general authorisations in the Gazette...” “The use of water under a general authorisation does not require a licence until the general authorisation is revoked, in which case licensing will be necessary...”

The General Authorisations for Section 21 (c) and (i) water uses (impeding or diverting flow or changing the bed, banks or characteristics of a watercourse) as defined under the NWA have recently been revised (Government Notice R509 of 2016). Determining if a water use licence is required for these water uses is now associated with the risk of degrading the ecological status of a watercourse. A low risk of impact could be authorised in terms of a General Authorisations (GA).

Provincial legislation

In addition to national legislation such as Protected Areas Act No. 57 of 2003, National Environmental Management: Biodiversity Act No. of 2004 and Conservation of Agricultural Resources Act No. 43 of 1983, some of South Africa's nine provinces have their own provincial biodiversity legislation, as nature conservation is a concurrent function of national and provincial government in terms of the Constitution (Act 108 of 1996).

5.2.1. Gauteng Conservation Plan 3.3 2011

A systematic conservation plan for Gauteng is the C-Plan 3 which is based on the systematic conservation protocol developed by Margules & Pressey (2000) and is based on the principles of complementarity, efficiency, defensibility and flexibility, irreplaceability, retention, persistence and accountability. Systematic conservation planning is an iterative process. Knowledge of the distribution of biodiversity, the status of species, approaches for dealing with aspects such as climate change, methods of data analysis, and the nature of threats to biodiversity within a planning region are constantly changing, especially in the Gauteng province which is developing at an extremely rapid rate. This requires that the conservation plan be treated as a living document with periodic review and updates.

The main purposes of C-Plan 3.3 are:

- to serve as the primary decision support tool for the biodiversity component of the Environmental Impact Assessment (EIA) process;
- to inform protected area expansion and biodiversity stewardship programmes in the province;
- to serve as a basis for development of Bioregional Plans in municipalities within the province.

The most important habitat categories to be taken into consideration in any environmental assessment process are:

- Critical Biodiversity Areas (CBAs): Areas that are required to meet biodiversity targets for species, ecosystems or ecological processes. These need to be kept in a natural or near-natural state, with no further loss of habitat or species. This category is split into:
 - CBA Irreplaceable Areas: These areas are required to meet biodiversity pattern and/or ecological processes targets. They are further subdivided into:
 - Irreplaceable: representing the only localities for which the conservation targets for one or more of the biodiversity features contained within can be achieved, i.e. there

are no alternative sites available; High Irreplaceable: representing areas of significantly high biodiversity value, but there are alternate sites within which the targets can be met for the biodiversity features contained within, but there aren't many;

- CBA: Irreplaceable Linkages: These are areas within Landscape Corridors that, due to modification of the natural landscape, represent the only remaining and highly constrained linkages which, if lost, would result in the breakage of the large corridor network as a whole. Their conservation is vital in maintaining the linkage of the corridor and its associated biodiversity related processes;
- CBA Optimal Areas: Areas selected to meet biodiversity pattern and/or biodiversity process targets. Alternative sites might be available to meet biodiversity targets. These areas can furthermore support suitable habitat for red and orange listed faunal and floral species;

Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) are in line with municipal Bioregional Plans. CBAs contain irreplaceable, important and protected areas (terms used in C-Plan 2) and ESAs contain buffered wetlands, buffered rivers, ridges within 1500m of CBAs, dolomite, corridors and low cost metropolitan areas (from Dr Holness).

C-Plan version 3.3 came about to properly bring C-Plan in line with municipal Bioregional Plans by reclassifying agricultural areas within CBAs rather as ESAs. Many transformed areas found since releasing C-Plan 3 were removed too. See the paragraph on C-Plan 3.3 later in this document for more information.

Important considerations in the development of the revised conservation plan, which did not exist during the production of previous versions, are the strategic support required by the protected area expansion and biodiversity stewardship programmes within GDARD, and the requirement for production of Bioregional Plans by the municipalities. These considerations influenced the technical aspects of the project in particular the identification of CBAs and ESAs as well as a public review of the technicalities of the conservation plan used to identify CBAs.

According to the C-plan, majority of the habitats within the study site do not fall under any conservation plan. Sensitive areas are mainly associated with the watercourse and southern site of one portion (Fig 4). Groundtruthing revealed that the site that falls under Important Area is infested with large *Eucalyptus* trees .



Figure 4: Gauteng C-Plan Map.

Important Bird and Biodiversity Area

BirdLife's Important Bird and Biodiversity Area concept has been developed and applied for over 30 years. Considerable effort has been devoted to refining and agreeing a set of simple but robust criteria that can be applied worldwide.

Initially, IBAs were identified only for terrestrial and freshwater environments, but over the past decade, the IBA process and method has been adapted and applied in the marine realm. In 2012, BirdLife published the first Marine IBA “e-atlas”, with details of 3,000 IBAs in coastal and territorial waters as well as on the high seas.

Important Bird and Biodiversity Areas (IBAs) are:

- Places of international significance for the conservation of birds and other biodiversity;
- Recognised world-wide as practical tools for conservation;
- Distinct areas amenable to practical conservation action;
- Identified using robust, standardised criteria; and
- Sites that together form part of a wider integrated approach to the conservation and sustainable use of the natural environment

Desktop and groundtruthing revealed that there are no Important Bird Areas near the study area.

Mining and Biodiversity Guideline

The mining industry plays a vital role in the growth and development of South Africa and its economy. Since the earliest discoveries of minerals in the region, this rich endowment of mineral resources has been a key driver of South Africa's social and economic development. Furthermore, mining continues to be one of the most significant sectors of our economy, providing jobs, growing our GDP and building relations with international trading partners (Mining Biodiversity Guideline, 2013).

The guideline also provides a four-hierarchy mitigation to help developers in avoiding impacts. The steps are as follow:

- Avoid or prevent
- Minimise
- Rehabilitate
- Offset

Critical Biodiversity Areas are also considered under these guidelines and special attention should be given to these biodiversity areas during prospecting or mining phase.

Although mining industry plays a vital role, it can also impact the biodiversity negatively if environmental laws are disregarded and not enforced. It is imperative for mining industries to adhere to these guidelines.

6. METHODOLOGY

Our methodology included both background information search (Desktop) and field survey. Below is the method used in our study for each of the subfields of biodiversity and the limitations encountered:

6.1. Flora Study

Transect walk method was used to identify the plants and vegetation structure occurring on the study site. Plants that could not be identified on site were photographed for later identification.

Limitations:

- Duration of the field survey. Not all sections were covered during this phase as this is a prospecting phase.
- Plants that were not flowering at the time of the survey
- Sampling frequency

Recommendations:

- Majority of the habitats have been transformed. Exploration within these disturbed sites will not pose major risk.

6.2. Fauna Study

Visual observations stand counts and indirect counts method were used to assess the animals occurring on the study site. Observations were made while walking through the site and while driving in some instances. The stand counts involved two observers who would sit quietly and wait for the animals to pass. Whereas the indirect counts included the searching of faecal matter/ pellets. Active search for reptiles and other small mammals was conducted by turning rocks and dead logs.

Limitations:

- Duration of the field survey
- Sampling frequency
- Circadian rhythm of animals (diurnal animals could not be detected)

Red Data Analysis and Floral Assessment

SANBI NEW POSA was compared to relevant literature detailing Protected and Red Data plant species lists in order to compile a list of Red Data plant species that may potentially occur within the study area. There are no historical floral records around the study area. The status is determined in table 1 below.

Table 1: Red Data Status definitions (SANBI, 2010).

p- protected Species		
M- Medicinal species		
EX	Extinct	A taxon is Extinct when there is no reasonable doubt that the last individual has died. Taxa should be listed as extinct only once exhaustive surveys throughout the historic range have failed to record an individual.
EW	Extinct in the Wild	A taxon is Extinct in the Wild when it is known to survive only in cultivation or as a naturalized population (or populations) well outside the past range.
CR PE	Critically Endangered (Possibly Extinct)	Critically Endangered (Possibly Extinct) taxa are those that are, on the balance of evidence, likely to be extinct, but for which there is a small chance that they may be extant. Hence, they should not be listed as Extinct until adequate surveys have failed to record the taxon.
CR	Critically Endangered	A taxon is Critically Endangered when the best available evidence indicates that it meets any of the five IUCN criteria for Critically Endangered and is therefore facing an extremely high risk of extinction in the wild.
EN	Endangered	A taxon is Endangered when the best available evidence indicates that it meets any of the five IUCN criteria for Endangered and is therefore facing a very high risk of extinction in the wild.
VU	Vulnerable	A taxon is Vulnerable when the best available evidence indicates that it meets any of the five IUCN criteria for Vulnerable and is therefore facing a high risk of extinction in the wild.

NT	Near Threatened	A taxon is Near Threatened when available evidence indicates that it nearly meets any of the five IUCN criteria for Vulnerable and is therefore likely to qualify for a threatened category in the near future.
CRITICALLY RARE		A taxon is Critically Rare when it is known to occur only at a single site but is not exposed to any direct or plausible potential threat and does not qualify for a category of threat according to the five IUCN criteria.
RARE		A taxon is Rare when it meets any of the four South African criteria for rarity but is not exposed to any direct or plausible potential threat and does not qualify for a category of threat according to the five IUCN criteria.
DECLINING		A taxon is Declining when it does not meet any of the five IUCN criteria and does not qualify for the categories Critically Endangered, Endangered, Vulnerable or Near Threatened, but there are threatening processes causing a continuing decline in the population.
DDD	Data Deficient—Insufficient Information	A taxon is DDD when there is inadequate information to make an assessment of its risk of extinction, but the taxon is well defined. Data Deficient is not a category of threat. However, listing of taxa in this category indicates that more information is required, and that future research could show that a threatened classification is appropriate.
LC	Least Concern	A taxon is Least Concern when it has been evaluated against the five IUCN criteria and does not qualify for the categories Critically Endangered, Endangered, Vulnerable or Near Threatened, and it is not rare, and the population is not declining.

Ecological function

Ecological function relates to the degree of ecological connectivity between systems within a landscape matrix. Therefore, systems with a high degree of landscape connectivity amongst one another are perceived to be more sensitive and will be those contributing to ecosystem service (for example wetlands for water and food) or overall preservation of biodiversity. Conservation importance relates to species diversity, endemism (unique species or unique processes) and the high occurrence of threatened and protected species or ecosystems protected by legislation.

Sensitivity scale

- **High ecological function:** Sensitive ecosystems with either low inherent resistance or resilience towards disturbance factors or highly dynamic systems considered to be stable and important for the maintenance of ecosystems integrity for example pristine grasslands, pristine wetlands and pristine ridges.

- **Medium ecological function:** Relatively important ecosystems at gradients of intermediate disturbances. An area may be considered of medium ecological function if it is directly adjacent to sensitive/pristine ecosystem.
- **Low ecological function:** Degraded and highly disturbed systems with little or no ecological function.
- **No Go Areas:** Areas that have irreplaceable biodiversity or important ecosystem function values which may be lost permanently if these ecosystems are transformed, with a high potential of also affecting adjacent and/or downstream ecosystems negatively.

Conservation status of the vegetation

- **High conservation importance:** Ecosystems with high species richness which usually provide suitable habitat for several threatened species. Usually termed ‘no-go’ areas and unsuitable for development and should be conserved.
- **Medium conservation importance:** Ecosystems with intermediate levels of species diversity without any threatened species. Low-density development may be accommodated, provided the current species diversity is conserved.
- **Low conservation importance:** Areas with little or no conservation potential and usually species poor (most species are usually exotic).

Cognisance was taken of the following environmental attributes and general information:

- Regional and local vegetation
- Current status of habitats
- Red Data habitat suitability, and
- Digital photographs

Phytosociological data accumulated include the following:

- Plant species and growth forms
- Dominant plant species
- Cover abundance values, and
- Samples or digital images of unidentified plant species

The site was observed to be of **Low-Medium Ecological Function**. Sensitive areas are associated with watercourse. The images below show the current status of the site.



Current crop farming activities



Dilapidated houses



Invasion of White poplar



Watercourse: no go area

7. RESULTS

Biological diversity everywhere is at great risk as a direct result of an ever-expanding human population and its associated needs for energy, water, food and minerals. Landscape transformation that is needed to accommodate these activities inevitably leads to habitat loss and habitat fragmentation, resulting in the mosaical appearance of undisturbed habitat within a matrix of transformed areas. These remaining areas of natural habitat are frequently too small to support the biodiversity that previously occupied the area, and the region loses its ecological integrity (Kamffer 2004). Conservation of the remaining ecosystem is vital and beneficial in the long run.

The assessment results half of the site has been severely transformed due to agricultural activities, human settlements and alien invasion. Areas that have been moderately

modified are mainly associated with watercourses. Historical records of flora and faunal species previously recorded around the study area is listed in the appendices.

Plants

Table 2: List of plant species recorded at the study site.

Species	Common Name	Growth Form	IUCN Conservation Status
<i>Eragrostis curvula</i>	Weeping Love grass	Grass	LC
<i>Eragrostis capensis</i>	Heart-seed love grass	Grass	LC
<i>Setaria sphacelata</i>	Golden bristle grass	Grass	LC
<i>Aristida congesta</i>	Tassle three-awn grass	Grass	LC
<i>Melinis repens</i>	Natal Grass	Grass	LC
<i>Erythrina lysistemon</i>	Common coral tree	Tree	LC
<i>Gomphocarpus fruticosus</i>	Milkweed	Shrub	LC
<i>Hypoxis rigidula</i>	Silver-leaved star flower	Herb	NE
<i>Typha capensis</i>	Bulrush	Tree	LC
<i>Combretum apiculatum</i>	Red bushwillow	Tree	LC

Weeds and Invasive Plants

The presence of several weeds and poor-quality species strongly reflects the transformed and degraded nature of the study site. The infestation of the listed invasive plants is high and require intervention. The following weeds and invasive plant taxa were recorded within the study site.

Table 3: List of weeds and invasive species for the study area

Species	Common Name	Growth Form	IUCN Conservation Status
<i>Acacia mearnsii</i>	Black Wattle	Tree	Declared Category 2
<i>Eucalyptus camaldulensis</i>	River red gum	Tree	Declared Category 1b
<i>Verbena bonariensis</i>	Tall Verbena	Herb	Declared Category 1b
<i>Solanum mauritianum</i>	Bug Weed	Herb	Declared Category 1b
<i>Populus alba</i>	White poplar	Tree	Declared Category 2
<i>Callistemon viminal</i>	Bottlebrush	Shrub	Declared Category 3
<i>Melia azedarach</i>	Syringa	Tree	Declared Category 1b
<i>Pinus elliotti</i> Engelm. and hybrids, varieties and selections	Patula Pine	Tree	Declared Category 2
<i>Morus alba</i>	Mulberry	Tree	Declared Category 3
<i>Argemone mexicana</i>	Yellow-flowered Mexican poppy	Herb	Declared Category 1b

<i>Opuntia ficus-indica</i>	Sweet prickly pear	Tree	Declared Category 1b
<i>Agave americana</i>	Century plant	Succulent	Category in Western Cape. Not listed elsewhere.
<i>Robinia pseudoacacia</i>	Black Locust	Tree	Declared Category 1b

Birds

Birds are regarded as one of the most useful bioindicators, and they have been used extensively as models to determine ecosystem function (see review Koskimies 1989; Potts et al. 2014; Bregman et al. 2016). High levels of human disturbance as well as habitat transformation and degradation on the study site and adjacent areas would result in the disappearance of the more elusive bird species. Majority of the birds recorded around the study site are generalists.

Table 4: List of bird species recorded at the study site.

Species	Common Name	IUCN Conservation Status
<i>Saxicola torquatus</i>	African Stonechat	LC
<i>Motacilla capensis</i>	Cape Wagtail	LC
<i>Vanellus armatus</i>	Blacksmith Lapwing	LC
<i>Alopochen aegyptiaca</i>	Egyptian Goose	LC
<i>Ardea melanocephala</i>	Black-headed Heron	LC
<i>Cisticola aberrans</i>	Lazy Cisticola	LC
<i>Spilopelia senegalensis</i>	Laughing Dove	LC
<i>Bostrychia hagedash</i>	Hadedda Ibis	LC
<i>Streptopelia capicola</i>	Cape Turtle-Dove	LC
<i>Passer domesticus</i>	House Sparrow	LC
<i>Passer melanurus</i>	Cape Sparrow	LC
<i>Corvus albus</i>	Pied Crow	LC

Mammals

Only one mammal species was observed during the survey, which was Slender Mongoose (*Herpestes sanguineus*). The area would not support a variety of mammals due to presence of humans and domestic dogs.

Reptiles

Herpetofauna do occur in human modified landscapes, so encouraging appropriate matrix land uses could contribute to their conservation. No reptiles were recorded during the survey.

THE MAIN IMPACTS

Vegetation disturbance through compaction and trampling;

Increased dust;

Noise pollution during exploration: and

Introduction and spread of declared weeds and alien invasive plants: This may occur in disturbed areas and/or where propagules of these plants are readily available.

8. Impact Assessment and Mitigations

Impact Phase: Exploration							
Potential impact description: Impacts on watercourses The major impact during this phase may result from infilling and impediment of watercourses if drilling occurs near the river banks.							
	Extent	Duration	Intensity	Status	Significance	Probability	Confidence
Without Mitigation	M	H	M	Negative	M	H	H
With Mitigation	L	M	L	Negative	M	M	H
Can the impact be reversed?		Yes, Watercourses can be rehabilitated.					
Will impact cause irreplaceable loss of resources?		No.					
Can impact be avoided, managed or mitigated?		Yes. All watercourses should be avoided.					
Mitigation measures: <ul style="list-style-type: none">No drilling is to be allowed within 100 m of all watercourses.							

Impact Phase: Exploration							
Potential impact description: Introduction of alien invasive plants Cleared areas which are not rehabilitated are likely to be invaded by aliens and pioneer plants.							
	Extent	Duration	Intensity	Status	Significance	Probability	Confidence
Without Mitigation	L	H	M	Negative	M	H	H
With Mitigation	L	L	L	Negative	L	L	H
Can the impact be reversed?		This impact can be prevented through appropriate mitigation measures such as eradication.					
Will impact cause irreplaceable loss of resources?		No. If this impact is correctly addressed, then no loss of resources will occur.					
Can impact be avoided, managed or mitigated?		Yes. This impact can be avoided if appropriate mitigation measures are followed.					
Mitigation measures: <ul style="list-style-type: none">Any cleared areas that are no longer or not required for drilling activities should be re-seeded with locally sourced seed of suitable species. Bare areas can also be packed with brush removed from other parts of the site to encourage natural vegetation regeneration and limit erosion.							

Impact Phase: Exploration							
Potential impact description: Direct and indirect avifauna and faunal Impacts							
The exploration phase will result in habitat loss, noise and disturbance on site. This will lead to direct and indirect disturbance of fauna. Slow-moving species such as the tortoises are likely to be killed by machinery.							
	Extent	Duration	Intensity	Status	Significance	Probability	Confidence
Without Mitigation	L	L	M	Negative	M	H	H
With Mitigation	L	L	M	Negative	M	M	H
Can the impact be reversed?		Yes, This impact can be prevented through appropriate mitigation measures.					
Will impact cause irreplaceable loss of resources?		No. No Species of Conservation Concern are likely to be impacted by the activities.					
Can impact be avoided, managed or mitigated?		Yes. Contractors should be informed about slow moving species that are likely to be crushed by construction vehicles.					
Mitigation measures:							
<ul style="list-style-type: none">No animal may be hunted, trapped, snared or captured for any purpose whatsoever.Speed of vehicles should be limited to allow for sufficient safety margins.							

Impact Phase: Exploration							
Potential impact description: Impacts on vegetation							
The major impact during this phase will result from vegetation clearance for drilling purposes							
	Extent	Duration	Intensity	Status	Significance	Probability	Confidence
Without Mitigation	L	H	M	Negative	M	H	H
With Mitigation	L	H	M	Negative	M	M	H
Can the impact be reversed?		No, once vegetation is cleared, it would not be possible to return it to its previous state.					
Will impact cause irreplaceable loss of resources?		No. The site has already been exposed to severe modifications. There is minimal intact vegetation remaining.					
Can impact be avoided, managed or mitigated?		No. Although mitigations will be provided, vegetation loss would be inevitable.					
Mitigation measures:							
<ul style="list-style-type: none">All natural vegetation not required to be removed should be protected against damage.							

9. REHABILITATION

The traditional definition of rehabilitation aims at returning the land in a given area to some degree of its former state after a particular process has resulted in its damage.

Rehabilitation requires that there is an attempt to imitate natural processes and reinstate natural ecological driving forces in such a way that it aids the recovery (or maintenance) of dynamic systems so that, although they are unlikely to be identical to their natural counterparts, they will be comparable in critical ways so as to function similarly (Jordan et al.1987). Rehabilitation should be based on an understanding of both the ecological starting point and on a defined goal endpoint and should accept that it is not possible to predict exactly how the disturbed vegetation is likely to respond to the rehabilitation interventions.

During this exploration phase, all disturbed areas should be rehabilitated. This should be done using indigenous vegetation.

10. CONCLUSION AND RECOMMENDATIONS

There are several habitats within the proposed site that have been exposed to high levels of disturbance resulting from plantations, alien invasion and human settlements.

The following are recommended:

- Watercourses must be avoided at all times except when moving across the sites. This should be done on existing crossings.
- All temporary stockpile areas including litter and dumped material and rubble must be removed on completion of exploration.
- No painting or marking of vegetation shall be allowed. Marking shall be done by steel stakes with tags, if required.
- Only necessary damage must be caused: for example, unnecessary driving around in the site should not take place.

The impacts associated with the proposed prospecting activities are likely to be from Low to Very Low after implementation of mitigation measures. As a result, it is the opinion of the specialist that this proposed prospecting application be considered provided that the recommendations stipulated in this study are adhered to.

It should be noted that should the applicant reach the mining right stage, a full ecological, wetland and aquatic studies are recommended.

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12. APPENDICES

Appendix 1: Historical Faunal Records

A, Mammal Records. Animal Demographic Unit.

NO.	Family	Scientific name	Common name	Red list category	Number of records	Last recorded
1	Bathyergidae	<i>Cryptomys hottentotus</i>	Southern African Mole-rat	Least Concern (2016)	9	1974-09-05
2	Bovidae	<i>Ourebia ourebi</i>	Oribi	Endangered	1	
3	Emballonuridae	<i>Taphozous (Taphozous) mauritanus</i>	Mauritian Tomb Bat	Least Concern	3	1971-03-15
4	Felidae	<i>Felis nigripes</i>	Black-footed Cat	Vulnerable (2016)	1	1993-09-27
5	Felidae	<i>Felis silvestris</i>	Wildcat	Least Concern (2016)	1	1974-09-05
6	Gliridae	<i>Graphiurus (Graphiurus) platyops</i>	Flat-headed African Dormouse	Data deficient	1	1987-06-04
7	Herpestidae	<i>Herpestes sanguineus</i>	Slender Mongoose	Least Concern (2016)	1	1974-09-05
8	Leporidae	<i>Lepus saxatilis</i>	Scrub Hare	Least Concern	2	1974-12-05
9	Leporidae	<i>Pronolagus randensis</i>	Jameson's Red Rock Hare	Least Concern (2016)	1	1974-12-05
10	Macroscelididae	<i>Elephantulus brachyrhynchus</i>	Short-snouted Elephant Shrew	Least Concern (2016)	2	1987-06-04
11	Macroscelididae	<i>Elephantulus myurus</i>	Eastern Rock Elephant Shrew	Least Concern (2016)	6	1974-09-05
12	Muridae	<i>Acomys (Acomys) spinosissimus</i>	Southern African Spiny Mouse	Least Concern	2	1974-08-05
13	Muridae	<i>Aethomys namaquensis</i>	Namaqua Rock Mouse	Least Concern	7	1974-08-05
14	Muridae	<i>Dasymys incommutus</i>	Common Dasymys	Near Threatened (2016)	1	1974-10-05
15	Muridae	<i>Gerbilliscus brantsii</i>	Highveld Gerbil	Least Concern (2016)	2	1974-11-05
16	Muridae	<i>Gerbilliscus leucogaster</i>	Bushveld Gerbil	Least Concern (2016)	6	1974-11-05
17	Muridae	<i>Lemniscomys rosalia</i>	Single-Striped Lemniscomys	Least Concern (2016)	1	1974-12-05
18	Muridae	<i>Mastomys natalensis</i>	Natal Mastomys	Least Concern (2016)	2	1974-08-05
19	Muridae	<i>Mus (Nannomys) minutoides</i>	Southern African Pygmy Mouse	Least Concern	1	1974-11-05
20	Muridae	<i>Rhabdomys pumilio</i>	Xeric Four-striped Grass Rat	Least Concern (2016)	3	1998-04-23
21	Mustelidae	<i>Mellivora capensis</i>	Honey Badger	Least Concern (2016)	1	
22	Nesomyidae	<i>Dendromus mystacalis</i>	Chestnut African Climbing Mouse	Least Concern (2016)	3	1974-12-05

23	Soricidae	<i>Crocidura mariquensis</i>	Swamp Musk Shrew	Near Threatened (2016)	14	1974-12-05
24	Thryonomyidae	<i>Thryonomys swinderianus</i>	Greater Cane Rat	Least Concern (2016)	1	1978-07-13
25	Viverridae	<i>Genetta tigrina</i>	Cape Genet (Cape Large-spotted Genet)	Least Concern (2016)	1	1974-09-05
					73	1974-11-05* 1974-09-05**

B, Reptile Records. Animal Demographic Unit.

NO.	Family	Scientific name	Common name	Red list category	Number of records	Last recorded
1	Agamidae	<i>Agama aculeata distanti</i>	Distant's Ground Agama	Least Concern (SARCA 2014)	3	1982-05-22
2	Agamidae	<i>Agama atra</i>	Southern Rock Agama	Least Concern (SARCA 2014)	3	2014-09-19
3	Amphisbaenidae	<i>Monopeltis infuscata</i>	Dusky Worm Lizard	Least Concern (SARCA 2014)	1	1900-06-15
4	Chamaeleonidae	<i>Chamaeleo dilepis</i>	Common Flap-neck Chameleon	Least Concern (SARCA 2014)	1	1900-06-15
5	Colubridae	<i>Dasypeltis scabra</i>	Rhombic Egg-eater	Least Concern (SARCA 2014)	1	1900-06-15
6	Colubridae	<i>Dispholidus typus viridis</i>	Northern Boomslang	Not evaluated	1	1900-06-15
7	Cordylidae	<i>Cordylus vittifer</i>	Common Girdled Lizard	Least Concern (SARCA 2014)	5	1982-05-22
8	Cordylidae	<i>Smaug vandami</i>	Van Dam's Girdled Lizard	Least Concern (SARCA 2014)	4	2014-09-19
9	Elapidae	<i>Hemachatus haemachatus</i>	Rinkhals	Least Concern (SARCA 2014)	4	1973-02-22
10	Gekkonidae	<i>Lygodactylus nigropunctatus</i>	Black-spotted Dwarf Gecko	Least Concern (SARCA 2014)	1	1900-06-15
11	Gekkonidae	<i>Pachydactylus affinis</i>	Transvaal Gecko	Least Concern (SARCA 2014)	4	1900-06-15
12	Gekkonidae	<i>Pachydactylus capensis</i>	Cape Gecko	Least Concern (SARCA 2014)	1	1900-06-15
13	Gerrhosauridae	<i>Gerrhosaurus flavigularis</i>	Yellow-throated Plated Lizard	Least Concern (SARCA 2014)	2	1900-06-15
14	Lacertidae	<i>Ichnotropis capensis</i>	Ornate Rough-scaled Lizard	Least Concern (SARCA 2014)	5	1900-06-15
15	Lacertidae	<i>Nucras intertexta</i>	Spotted Sandveld Lizard	Least Concern (SARCA 2014)	1	1900-06-15
16	Lamprophiidae	<i>Aparallactus capensis</i>	Black-headed Centipede-eater	Least Concern (SARCA 2014)	2	1982-05-22
17	Lamprophiidae	<i>Atractaspis bibronii</i>	Bibron's Stiletto Snake	Least Concern (SARCA 2014)	3	1973-07-02

18	Lamprophiidae	<i>Boaedon capensis</i>	Brown House Snake	Least Concern (SARCA 2014)	1	2006-08-25
19	Lamprophiidae	<i>Lamprophis aurora</i>	Aurora House Snake	Least Concern (SARCA 2014)	1	1969-05-16
20	Lamprophiidae	<i>Lycodonomorphus rufulus</i>	Brown Water Snake	Least Concern (SARCA 2014)	3	2010-03-31
21	Lamprophiidae	<i>Lycophidion capense capense</i>	Cape Wolf Snake	Least Concern (SARCA 2014)	1	1976-03-11
22	Lamprophiidae	<i>Psammophis brevirostris</i>	Short-snouted Grass Snake	Least Concern (SARCA 2014)	4	1900-06-15
23	Lamprophiidae	<i>Psammophis trinasalis</i>	Fork-marked Sand Snake	Least Concern (SARCA 2014)	3	1900-06-15
24	Lamprophiidae	<i>Psammophylax tritaeniatus</i>	Striped Grass Snake	Least Concern (SARCA 2014)	1	1911-11-14
25	Lamprophiidae	<i>Pseudaspis cana</i>	Mole Snake	Least Concern (SARCA 2014)	2	1900-06-15
26	Scincidae	<i>Panaspis wahlbergii</i>	Wahlberg's Snake-eyed Skink	Least Concern (SARCA 2014)	2	2014-09-19
27	Scincidae	<i>Trachylepis capensis</i>	Cape Skink	Least Concern (SARCA 2014)	8	2021-01-16
28	Scincidae	<i>Trachylepis punctatissima</i>	Speckled Rock Skink	Least Concern (SARCA 2014)	3	2010-03-30
29	Scincidae	<i>Trachylepis varia sensu lato</i>	Common Variable Skink Complex	Least Concern (SARCA 2014)	8	1982-05-22
30	Testudinidae	<i>Kinixys lobatsiana</i>	Lobatse Hinged Tortoise	Least Concern (SARCA 2014)	1	1900-06-15
31	Varanidae	<i>Varanus niloticus</i>	Water Monitor	Least Concern (SARCA 2014)	6	1900-06-15
32	Viperidae	<i>Bitis arietans arietans</i>	Puff Adder	Least Concern (SARCA 2014)	1	1900-06-15
33	Viperidae	<i>Causus rhombeatus</i>	Rhombic Night Adder	Least Concern (SARCA 2014)	11	2010-03-31
					98	1911-11-14* 1900-06-15**

C, Frog Records, Animal Demographic Unit.

NO.	Family	Scientific name	Common name	Red list category	Number of records	Last recorded
1	Bufonidae	<i>Poyntonophrynus fenoulheti</i>	Northern Pygmy Toad	Least Concern	1	1982-05-22
2	Bufonidae	<i>Schismaderma carens</i>	Red Toad	Least Concern	2	2014-09-20
3	Bufonidae	<i>Sclerophrys capensis</i>	Raucous Toad	Least Concern	3	2014-09-20
4	Bufonidae	<i>Sclerophrys gutturalis</i>	Guttural Toad	Least Concern (IUCN, 2016)	4	2014-09-21
5	Hyperoliidae	<i>Kassina senegalensis</i>	Bubbling Kassina	Least Concern	7	2000-12-09
6	Phrynobatrachidae	<i>Phrynobatrachus natalensis</i>	Snoring Puddle Frog	Least Concern (IUCN, 2013)	3	1974-03-17
7	Pipidae	<i>Xenopus laevis</i>	Common Platanna	Least Concern	1	2000-12-05
8	Ptychadenidae	<i>Ptychadena porosissima</i>	Striped Grass Frog	Least Concern	1	2000-01-21
9	Pyxicephalidae	<i>Amietia delalandii</i>	Delalande's River Frog	Least Concern (2017)	4	2021-04-08
10	Pyxicephalidae	<i>Cacosternum boettgeri</i>	Common Caco	Least Concern (2013)	6	2000-12-09
11	Pyxicephalidae	<i>Strongylopus fasciatus</i>	Striped Stream Frog	Least Concern	3	2000-12-08
12	Pyxicephalidae	<i>Strongylopus grayii</i>	Clicking Stream Frog	Least Concern	1	
13	Pyxicephalidae	<i>Tomopterna cryptotis</i>	Tremelo Sand Frog	Least Concern	2	2000-01-17
14	Pyxicephalidae	<i>Tomopterna natalensis</i>	Natal Sand Frog	Least Concern	4	2014-09-21
					42	2000-12-08* 2000-01-17**

D, Plant Species Records.

Family	Genus	Sp1	Author1	Rank1	Sp2	Ecology
Anacardiaceae	<i>Searsia</i>	<i>gracillima</i>	(Engl.) Moffett	var.	<i>gracillima</i>	Indigenous
Fabaceae	<i>Indigofera</i>	<i>oxytropis</i>	Benth. ex Harv.			Indigenous
Apocynaceae	<i>Raphionacme</i>	<i>velutina</i>	Schltr.			Indigenous
Santalaceae	<i>Thesium</i>	<i>impeditum</i>	A.W.Hill			Indigenous
Rubiaceae	<i>Fadogia</i>	<i>homblei</i>	De Wild.			Indigenous
Apocynaceae	<i>Xysmalobium</i>	<i>undulatum</i>	(L.) W.T.Aiton	var.	<i>ensifolium</i>	Indigenous
Asteraceae	<i>Coreopsis</i>	<i>lanceolata</i>	L.			
Caryophyllaceae	<i>Dianthus</i>	<i>transvaalensis</i>	Burt Davy			Indigenous
Apocynaceae	<i>Parapodium</i>	<i>costatum</i>	E.Mey.			Indigenous
Asteraceae	<i>Helichrysum</i>	<i>caespitium</i>	(DC.) Harv.			Indigenous
Fabaceae	<i>Eriosema</i>	<i>burkei</i>	Benth. ex Harv.	var.	<i>burkei</i>	Indigenous
Malvaceae	<i>Triumfetta</i>	<i>obtusicornis</i>	Sprague & Hutch.			
Scrophulariaceae	<i>Nemesia</i>	<i>fruticans</i>	(Thunb.) Benth.			Indigenous
Scrophulariaceae	<i>Manulea</i>	<i>parviflora</i>	Benth. E.Mey. ex	var.	<i>parviflora</i>	Indigenous
Geraniaceae	<i>Monsonia</i>	<i>angustifolia</i>	A.Rich.			Indigenous
Apocynaceae	<i>Pachycarpus</i>	<i>schinzianus</i>	(Schltr.) N.E.Br.			Indigenous
Malvaceae	<i>Hibiscus</i>	<i>pusillus</i>	Thunb.			Indigenous
Aponogetonaceae	<i>Aponogeton</i>	<i>juncus</i>	Lehm.			Indigenous
Salicaceae	<i>Populus</i>	<i>sp.</i>				
Polygalaceae	<i>Polygala</i>	<i>albida</i>	Schinz			Indigenous
Apocynaceae	<i>Asclepias</i>	<i>aurea</i>	(Schltr.) Schltr.			Indigenous
Poaceae	<i>Paspalum</i>	<i>urvillei</i>	Steud.			
Santalaceae	<i>Thesium</i>	<i>magalismontanum</i>	Sond.			Indigenous
Dipsacaceae	<i>Scabiosa</i>	<i>columbaria</i>	L.			Indigenous
Fabaceae	<i>Zornia</i>	<i>milneana</i>	Mohlenbr.			Indigenous
Asteraceae	<i>Dicoma</i>	<i>anomala</i>	Sond.			Indigenous

Lamiaceae	<i>Stachys</i>	<i>erectiuscula</i>	Gurke			
Asteraceae	<i>Helichrysum</i>	<i>nudifolium</i>	(L.) Less.	var.	<i>nudifolium</i>	Indigenous
Apocynaceae	<i>Aspidoglossum</i>	<i>restioides</i>	(Schltr.) Kupicha			
Cyperaceae	<i>Kyllinga</i>	<i>alba</i>	Nees			Indigenous
Thymelaeaceae	<i>Gnidia</i>	<i>gymnostachya</i>	(C.A.Mey.) Gilg			Indigenous
Apocynaceae	<i>Periglossum</i>	<i>mackenii</i>	Harv.			Indigenous
Malvaceae	<i>Triumfetta</i>	<i>sonderi</i>	Ficalho & Hiern			
Orobanchaceae	<i>Striga</i>	<i>elegans</i>	Benth. (E.Mey.)			Indigenous
Apocynaceae	<i>Brachystelma</i>	<i>rubellum</i>	Peckover			Indigenous
Iridaceae	<i>Gladiolus</i>	<i>elliotii</i>	Baker			Indigenous
Commelinaceae	<i>Commelina</i>	<i>livingstonii</i>	C.B.Clarke			Indigenous
Anacardiaceae	<i>Searsia</i>	<i>magalismontana</i>	(Sond.) Moffett	subsp.	<i>magalismontana</i>	Indigenous
Lamiaceae	<i>Rotheca</i>	<i>hirsuta</i>	(Hochst.) R.Fern.			Indigenous
Rubiaceae	<i>Pygmaeothamnus</i>	<i>zeyheri</i>	(Sond.) Robyns (Gurke)	var.	<i>zeyheri</i>	Indigenous
Lamiaceae	<i>Syncolostemon</i>	<i>pretoriae</i>	D.F.Otieno			Indigenous
Apocynaceae	<i>Gomphocarpus</i>	<i>fruticosus</i>	(L.) W.T.Aiton	subsp.	<i>fruticosus</i>	Indigenous
Orobanchaceae	<i>Striga</i>	<i>bilabiata</i>	(Thunb.) Kuntze	subsp.	<i>bilabiata</i>	Indigenous
Orobanchaceae	<i>Buchnera</i>	<i>sp.</i>				
Apocynaceae	<i>Asclepias</i>	<i>gibba</i>	(E.Mey.) Schltr. (Thunb.) Eckl. & Zeyh.	var.	<i>gibba</i>	Indigenous
Talinaceae	<i>Talinum</i>	<i>caffrum</i>				Indigenous
Malvaceae	<i>Hermannia</i>	<i>sp.</i>				
Euphorbiaceae	<i>Euphorbia</i>	<i>serpens</i>	Kunth (Sond.)			
Apiaceae	<i>Afroscidium</i>	<i>magalismontanum</i>	P.J.D.Winter			Indigenous

E, Avifaunal Records. SABAP2, Animal Demographic Unit.

NO.	Common group	Common species	Genus	Species
1	722		Bokmakierie	Telophorus
2	72		Hamerkop	Scopus
3	1016		Mallard	Anas
4	637		Neddicky	Cisticola
5	844		Quailfinch	Ortygospiza
6	533	Babbler	Arrow-marked	Turdoides
7	431	Barbet	Black-collared	Lybius
8	439	Barbet	Crested	Trachyphonus
9	404	Bee-eater	European	Merops
10	410	Bee-eater	Little	Merops
11	411	Bee-eater	Swallow-tailed	Merops
12	409	Bee-eater	White-fronted	Merops
13	808	Bishop	Southern Red	Euplectes
14	812	Bishop	Yellow-crowned	Euplectes
15	67	Bittern	Little	Ixobrychus
16	709	Boubou	Southern	Laniarius
17	545	Bulbul	Dark-capped	Pycnonotus
18	872	Bunting	Cinnamon-breasted	Emberiza
19	874	Bunting	Golden-breasted	Emberiza
20	154	Buzzard	Common	Buteo
21	152	Buzzard	Jackal	Buteo
22	860	Canary	Black-throated	Crithagra
23	859	Canary	Yellow-fronted	Crithagra
24	575	Chat	Ant-eating	Myrmecocichla
25	570	Chat	Familiar	Oenanthe
26	631	Cisticola	Cloud	Cisticola
27	630	Cisticola	Desert	Cisticola
28	646	Cisticola	Levaillant's	Cisticola
29	639	Cisticola	Wailing	Cisticola
30	634	Cisticola	Wing-snapping	Cisticola
31	629	Cisticola	Zitting	Cisticola
32	212	Coot	Red-knobbed	Fulica
33	50	Cormorant	Reed	Microcarbo
34	47	Cormorant	White-breasted	Phalacrocorax
35	4131	Coucal	Burchell's	Centropus
36	277	Courser	Temminck's	Cursorius

NO.	Common group	Common species	Genus	Species
37	203	Crake	Black	Zapornia
38	522	Crow	Pied	Corvus
39	344	Cuckoo	Black	Cuculus
40	352	Cuckoo	Diederik	Chrysococcyx
41	343	Cuckoo	Red-chested	Cuculus
42	127	Cuckoo-Hawk	African	Aviceda
43	52	Darter	African	Anhinga
44	316	Dove	Cape Turtle	Streptopelia
45	317	Dove	Laughing	Spilopelia
46	318	Dove	Namaqua	Oena
47	314	Dove	Red-eyed	Streptopelia
48	940	Dove	Rock	Columba
49	517	Drongo	Fork-tailed	Dicrurus
50	95	Duck	African Black	Anas
51	10003	Duck	Muscovy	Cairina
52	104	Duck	White-backed	Thalassornis
53	100	Duck	White-faced Whistling	Dendrocygna
54	96	Duck	Yellow-billed	Anas
55	149	Eagle	African Fish	Haliaeetus
56	146	Eagle	Black-chested Snake	Circaetus
57	145	Eagle	Brown Snake	Circaetus
58	138	Eagle	Long-crested	Lophaetus
59	368	Eagle-Owl	Spotted	Bubo
60	58	Egret	Great	Ardea
61	61	Egret	Western Cattle	Bubulcus
62	119	Falcon	Amur	Falco
63	821	Finch	Cut-throat	Amadina
64	820	Finch	Red-headed	Amadina
65	833	Firefinch	African	Lagonosticta
66	835	Firefinch	Jameson's	Lagonosticta
67	707	Fiscal	Southern	Lanius
68	682	Flycatcher	African Paradise	Terpsiphone
69	665	Flycatcher	Fiscal	Melaenornis
70	654	Flycatcher	Spotted	Muscicapa
71	173	Francolin	Coqui	Peliperdix
72	179	Francolin	Orange River	Scleroptila
73	178	Francolin	Red-winged	Scleroptila

NO.	Common group	Common species	Genus	Species
74	339	Go-away-bird	Grey	Crinifer
75	10004	Goose	Domestic	Anser
76	89	Goose	Egyptian	Alopochen
77	88	Goose	Spur-winged	Plectropterus
78	618	Grassbird	Cape	Sphenoeacus
79	6	Grebe	Little	Tachybaptus
80	192	Guineafowl	Helmeted	Numida
81	288	Gull	Grey-headed	Chroicocephalus
82	55	Heron	Black-headed	Ardea
83	54	Heron	Grey	Ardea
84	57	Heron	Purple	Ardea
85	62	Heron	Squacco	Ardeola
86	443	Honeybird	Brown-backed	Prodotiscus
87	442	Honeyguide	Lesser	Indicator
88	418	Hoopoe	African	Upupa
89	424	Hornbill	African Grey	Lophoceros
90	81	Ibis	African Sacred	Threskiornis
91	83	Ibis	Glossy	Plegadis
92	84	Ibis	Hadada	Bostrychia
93	228	Jacana	African	Actophilornis
94	122	Kestrel	Greater	Falco
95	402	Kingfisher	Brown-hooded	Halcyon
96	395	Kingfisher	Giant	Megaceryle
97	397	Kingfisher	Malachite	Corythornis
98	394	Kingfisher	Pied	Ceryle
99	399	Kingfisher	Woodland	Halcyon
100	130	Kite	Black-winged	Elanus
101	1035	Korhaan	Northern Black	Afrotis
102	247	Lapwing	African Wattled	Vanellus
103	245	Lapwing	Blacksmith	Vanellus
104	242	Lapwing	Crowned	Vanellus
105	1183	Lark	Eastern Clapper	Mirafr
106	488	Lark	Red-capped	Calandrella
107	458	Lark	Rufous-naped	Mirafr
108	474	Lark	Spike-heeled	Chersomanes
109	703	Longclaw	Cape	Macronyx
110	823	Mannikin	Bronze	Spermestes

NO.	Common group	Common species	Genus	Species
111	510	Martin	Banded	Riparia
112	509	Martin	Brown-throated	Riparia
113	508	Martin	Sand	Riparia
114	210	Moorhen	Common	Gallinula
115	392	Mousebird	Red-faced	Urocolius
116	390	Mousebird	Speckled	Colius
117	734	Myna	Common	Acridotheres
118	521	Oriole	Black-headed	Oriolus
119	1	Ostrich	Common	Struthio
120	361	Owl	Marsh	Asio
121	311	Pigeon	Speckled	Columba
122	692	Pipit	African	Anthus
123	695	Pipit	Buffy	Anthus
124	10877	Pipit	Nicholson's	Anthus
125	694	Pipit	Plain-backed	Anthus
126	238	Plover	Three-banded	Charadrius
127	102	Pochard	Southern	Netta
128	650	Prinia	Black-chested	Prinia
129	649	Prinia	Tawny-flanked	Prinia
130	712	Puffback	Black-backed	Dryoscopus
131	805	Quelea	Red-billed	Quelea
132	197	Rail	African	Rallus
133	581	Robin-Chat	Cape	Cossypha
134	867	Seed eater	Streaky-headed	Crithagra
135	94	Shoveler	Cape	Spatula
136	724	Shrike	Magpie	Urolestes
137	708	Shrike	Red-backed	Lanius
138	250	Snipe	African	Gallinago
139	786	Sparrow	Cape	Passer
140	784	Sparrow	House	Passer
141	4142	Sparrow	Southern Grey-headed	Passer
142	780	Sparrow-Weaver	White-browed	Plocepasser
143	159	Sparrowhawk	Black	Accipiter
144	157	Sparrowhawk	Ovambo	Accipiter
145	183	Spurfowl	Natal	Pternistis
146	185	Spurfowl	Swainson's	Pternistis
147	737	Starling	Cape	Lamprotornis

NO.	Common group	Common species	Genus	Species
148	746	Starling	Pied	Lamprotornis
149	745	Starling	Red-winged	Onychognathus
150	735	Starling	Wattled	Creatophora
151	576	Stonechat	African	Saxicola
152	78	Stork	Abdim's	Ciconia
153	80	Stork	White	Ciconia
154	772	Sunbird	Amethyst	Chalcomitra
155	763	Sunbird	White-bellied	Cinnyris
156	493	Swallow	Barn	Hirundo
157	502	Swallow	Greater Striped	Cecropis
158	503	Swallow	Lesser Striped	Cecropis
159	498	Swallow	Pearl-breasted	Hirundo
160	501	Swallow	Red-breasted	Cecropis
161	504	Swallow	South African Cliff	Petrochelidon
162	495	Swallow	White-throated	Hirundo
163	208	Swamphen	African	Porphyrio
164	387	Swift	African Palm	Cypsiurus
165	385	Swift	Little	Apus
166	383	Swift	White-rumped	Apus
167	99	Teal	Blue-billed	Spatula
168	97	Teal	Red-billed	Anas
169	305	Tern	Whiskered	Chlidonias
170	275	Thick-knee	Spotted	Burhinus
171	557	Thrush	Groundscraper	Turdus
172	1104	Thrush	Karoo	Turdus
173	552	Thrush	Kurrichane	Turdus
174	686	Wagtail	Cape	Motacilla
175	606	Warbler	African Reed	Acrocephalus
176	603	Warbler	Great Reed	Acrocephalus
177	604	Warbler	Lesser Swamp	Acrocephalus
178	609	Warbler	Little Rush	Bradypterus
179	607	Warbler	Marsh	Acrocephalus
180	599	Warbler	Willow	Phylloscopus
181	843	Waxbill	Common	Estrilda
182	838	Waxbill	Orange-breasted	Amandava
183	799	Weaver	Cape	Ploceus
184	803	Weaver	Southern Masked	Ploceus

NO.	Common group	Common species	Genus	Species
185	804	Weaver	Thick-billed	Amblyospiza
186	797	Weaver	Village	Ploceus
187	568	Wheatear	Capped	Oenanthe
188	564	Wheatear	Mountain	Myrmecocichla
189	1172	White-eye	Cape	Zosterops
190	846	Whydah	Pin-tailed	Vidua
191	818	Widowbird	Long-tailed	Euplectes
192	813	Widowbird	Red-collared	Euplectes
193	814	Widowbird	White-winged	Euplectes
194	419	Wood Hoopoe	Green	Phoeniculus
195	453	Wryneck	Red-throated	Jynx

