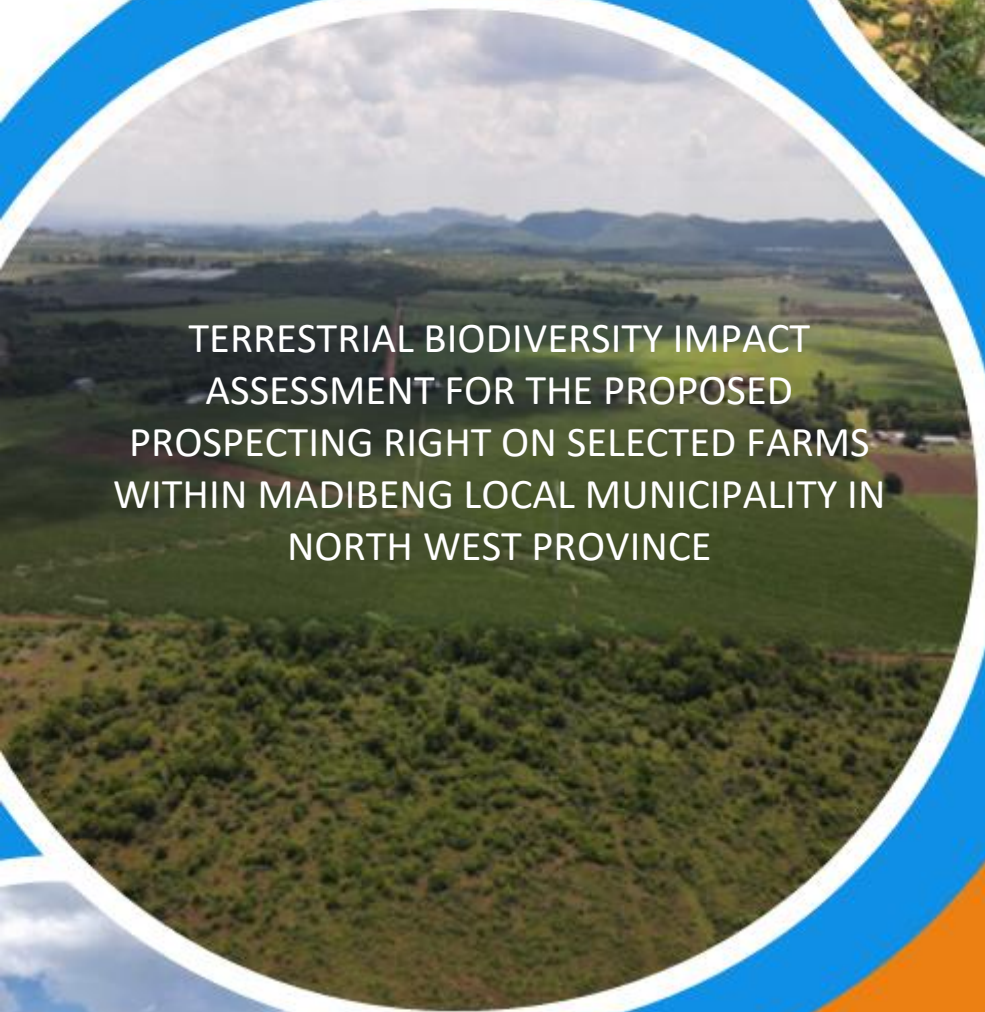




TERRESTRIAL BIODIVERSITY IMPACT
ASSESSMENT FOR THE PROPOSED
PROSPECTING RIGHT ON SELECTED FARMS
WITHIN MADIBENG LOCAL MUNICIPALITY IN
NORTH WEST PROVINCE



DOCUMENT CONTROL

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Authors	Mokgatla Molepo <i>Pr.Sci.Nat.</i> 009509

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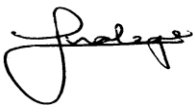
DECLARATION OF INDEPENDENCE

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

- Act/acted as an independent specialist to Archean Resources (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)

20 December 2021

BACKGROUND AND EXECUTIVE SUMMARY

MORA Ecological Services (Pty) Ltd was appointed by Archean Resources (Pty) Ltd to conduct a terrestrial biodiversity impact assessment for the proposed prospecting right on selected portions Farm Mamagalieskraal and Bokfontein within Madibeng Local Municipality in the North West 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 December 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 Marikana Thornveld. The vegetation is dominated by woody species, and it has been transformed in some of the sections within and around the proposed site.

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.

Conclusions and Recommendations:

The site project site is of low sensitivity due to the existing Bushveld Vametco mine, human settlements and farming activities. Majority of the habitats within the site have been transformed as a result. During the exploration phase, all watercourses should be treated as no go areas, these include the drainage lines and the concrete canal. 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.

1. INTRODUCTION AND PROJECT LOCATION AND DESCRIPTION

Humans alter their environment to suit their needs, to improve their quality of life, and to encourage economic growth. Generally, it is now accepted that development should be planned to make the best possible use of natural resources and to avoid degradation of the environment. Hence the need to pay explicit attention to environmental factors in the decision-making process. This should entail an accurate prediction and assessment of the impact of any development on the environment. It is essential for such assessment procedures to be developed alongside development planning, with the necessary mitigation that could inform development projects to conserve the natural environment.

Mora Ecological (Pty) Ltd has been appointed by Archean Resources (Pty) Ltd to undertake the required Environmental Authorization process for the proposed coal prospecting rights on selected portions Farm Mamagalieskraal and Bokfontein within Madibeng Local Municipality in the North West Province (Fig. 1). The study site/proposed area lies approximately 11 km north east of Brits Town. Land uses include low density residential, mining and mixed farming.

Affected farms are displayed below:

No.	Farm/Portion No.	Farm Name	Area (Ha)	LPI Code
1	RE/14/420	Mamagalieskraal	11.88	T0JQ00000000042000014
2	839/420	Mamagalieskraal	31.34	T0JQ00000000042000839
3	840/420	Mamagalieskraal	24.83	T0JQ00000000042000840
4	841/420	Mamagalieskraal	19.45	T0JQ00000000042000841
5	842/420	Mamagalieskraal	18.90	T0JQ00000000042000842
6	RE/843/420	Mamagalieskraal	30.21	T0JQ00000000042000843
7	844/420	Mamagalieskraal	52.73	T0JQ00000000042000844
8	845/420	Mamagalieskraal	46.01	T0JQ00000000042000845
9	846/420	Mamagalieskraal	24.44	T0JQ00000000042000846
10	847/420	Mamagalieskraal	7.66	T0JQ00000000042000847
11	848/420	Mamagalieskraal	10.36	T0JQ00000000042000848
12	849/420	Mamagalieskraal	24.46	T0JQ00000000042000849
13	RE/850/420	Mamagalieskraal	13.53	T0JQ00000000042000850
14	851/420	Mamagalieskraal	42.82	T0JQ00000000042000851
15	852/420	Mamagalieskraal	55.68	T0JQ00000000042000852
16	896/420	Mamagalieskraal	2.50	T0JQ00000000042000896
17	897/420	Mamagalieskraal	2.50	T0JQ00000000042000897
18	898/420	Mamagalieskraal	2.50	T0JQ00000000042000898

19	899/420	Mamagalieskraal	2.55	T0JQ00000000042000899
20	900/420	Mamagalieskraal	2.50	T0JQ00000000042000900
21	421	Bokfontein	21.43	T0JQ00000000042100000
22	1/426	Bokfontein	770.70	T0JQ00000000042600001
23	3/426	Bokfontein	1.55	T0JQ00000000042600003
24	4/426	Bokfontein	0.40	T0JQ00000000042600004

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.

2.1. 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 ratings of the anticipated impacts were evaluated, and recommendations and deductions were made.

2.2. 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.

3. SURVEY METHODS AND REPORTING

Climate

The climate in Brits is a local steppe climate. There is little rainfall throughout the year. According to Köppen and Geiger, this climate is classified as BSh. The average annual temperature in Brits is 19.4 °C with rainfall about 629 mm annually.

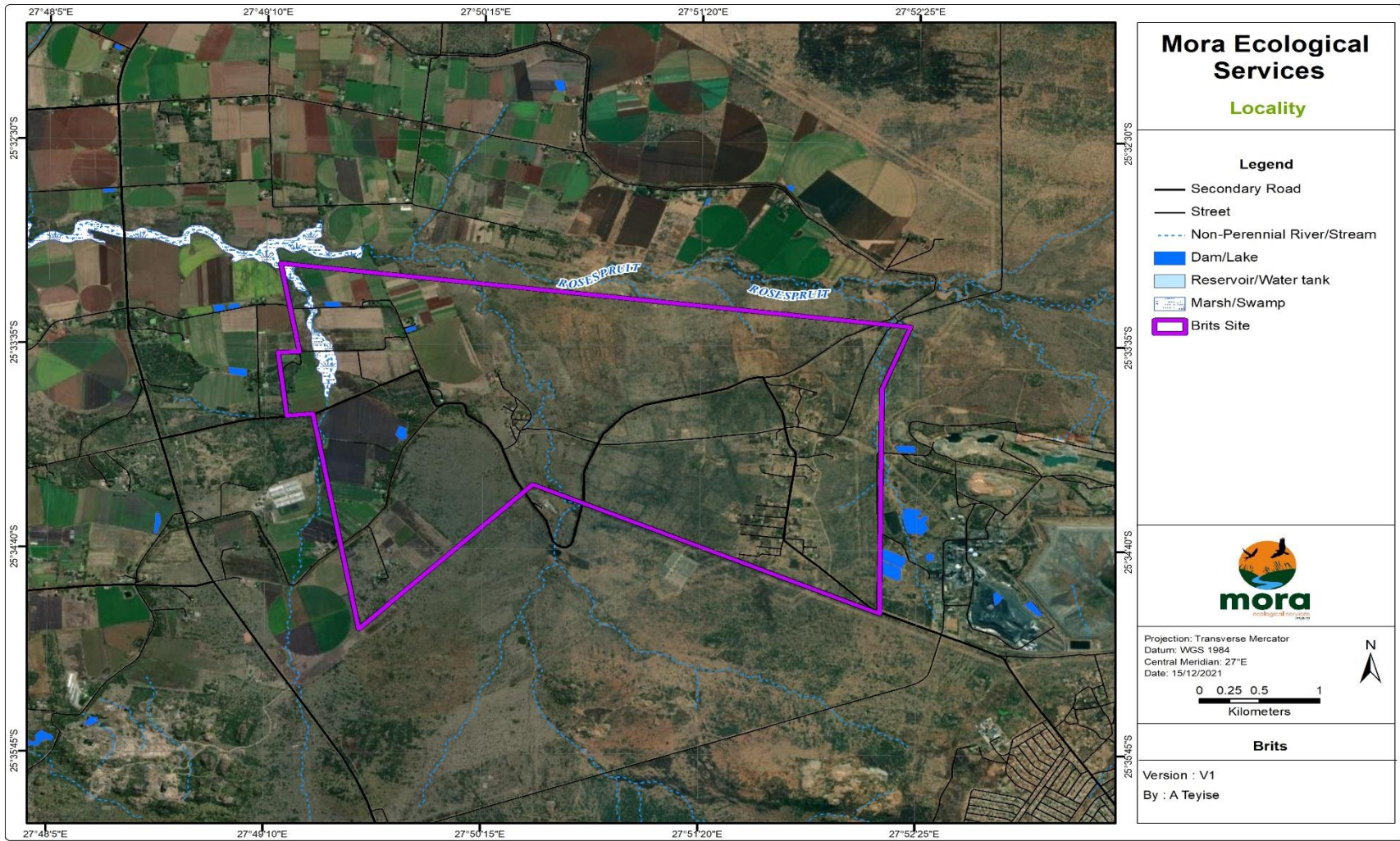


Figure 1: Location of the study site.

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 Marikana Thornveld (Fig. 2).

Distribution

This vegetation type is found in North West and Gauteng. It occurs on plains from Rustenburg area in the west through Marikana and Brits to the Pretoria area in the east. It occurs on a varying altitude ranging between 1050 -1450 m a.s.l.

Vegetation & Landscape Features

Open *Vachellia karroo* woodland, occurring in valleys and slightly undulating plains, and some lowland hills. Shrubs are more dense along drainage lines, on termitaria and rocky outcrops or in other habitat protected from fire.

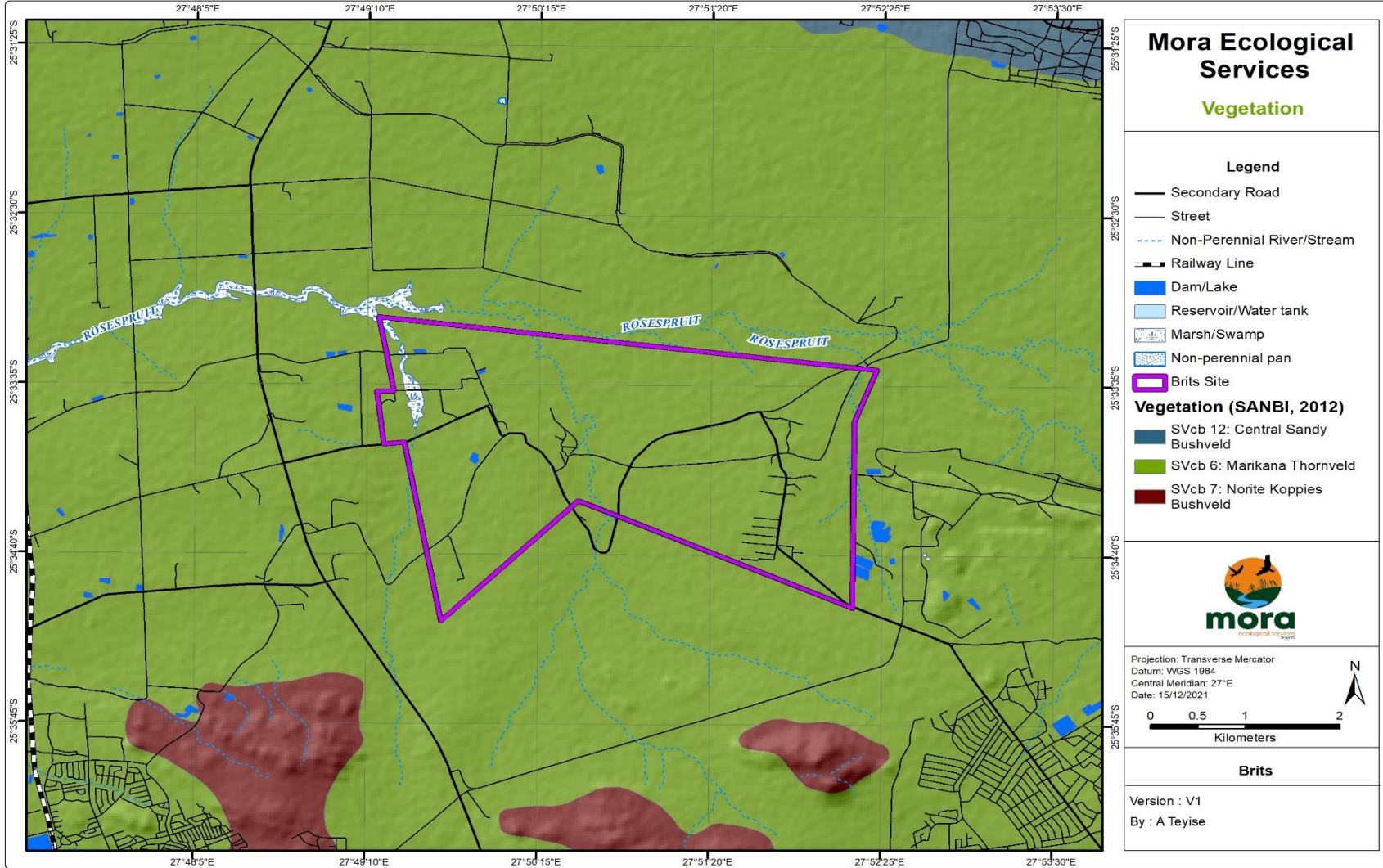


Figure 2: Vegetation map of the study site.



Concrete canal within the site



Aerial view of the canal



Natural vegetation near low density farmhouses



Crop fields located west of the site



Ntsopile village



Rubble dumping

Figure 3: View of the site.

4. 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. North West Biodiversity Sector Plan (2015)

This Biodiversity Plan delineates on a map, commonly known as a Critical Biodiversity Areas (CBA), biodiversity priority areas called Critical Biodiversity Areas, Ecological Support Areas and Protected Areas. These areas are the portfolio of sites that are required to meet the region's biodiversity targets and need to be maintained in the appropriate condition for their category. It is highly recommended that this Conservation Plan be a primary biodiversity consideration in Environmental Impact Assessments.

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

Criteria of Identifying CBA

A CBA is an area that must remain in good ecological condition in order to meet biodiversity targets for ecosystem types, species of special concern or ecological processes. CBAs can meet biodiversity targets for terrestrial or aquatic features, or both. Together with protected areas, the portfolio of CBAs identified in a biodiversity plan must collectively meet biodiversity targets for representation of ecosystem types and species of special concern, and may also meet biodiversity targets for some ecological processes. Ecological Support Areas (ESAs) are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets (thresholds), but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree or extent of restriction on land use and resource use in these areas may be lower than that recommended for CBAs.

Criteria for Identifying ESAs

An ESA is an area that must remain in at least fair ecological condition in order to: meet biodiversity targets for ecological processes that have not been met in CBAs or protected areas; meet biodiversity targets for representation of ecosystem types or species of special concern when it is not possible to meet them in CBAs; support ecological functioning of a protected area or CBA (e.g. protected area buffers); or a combination of these. ESAs can meet biodiversity targets for terrestrial or aquatic features, or both. All ecological processes important for the long-term persistence of ecosystems and species should be adequately included in the portfolio of protected areas, CBAs and ESAs. Sites selected to form part of ESAs could include sites in good, fair or even severely modified ecological condition, as long as the current ecological condition is compatible with fulfilling the purpose for which the ESA has been selected. The desired state/management objective for most ESAs is to maintain them in at least fair ecological condition. For ESAs that are severely modified, the management objective is no further deterioration in the current ecological condition.

Sensitivity Analysis

In terms of North West Biodiversity Sector Plan 2015, only a small fraction within the proposed project falls within Terrestrial Critical Biodiversity Area 2 (Fig. 4). Ground truthing revealed that the site has been exposed to some levels of disturbance.

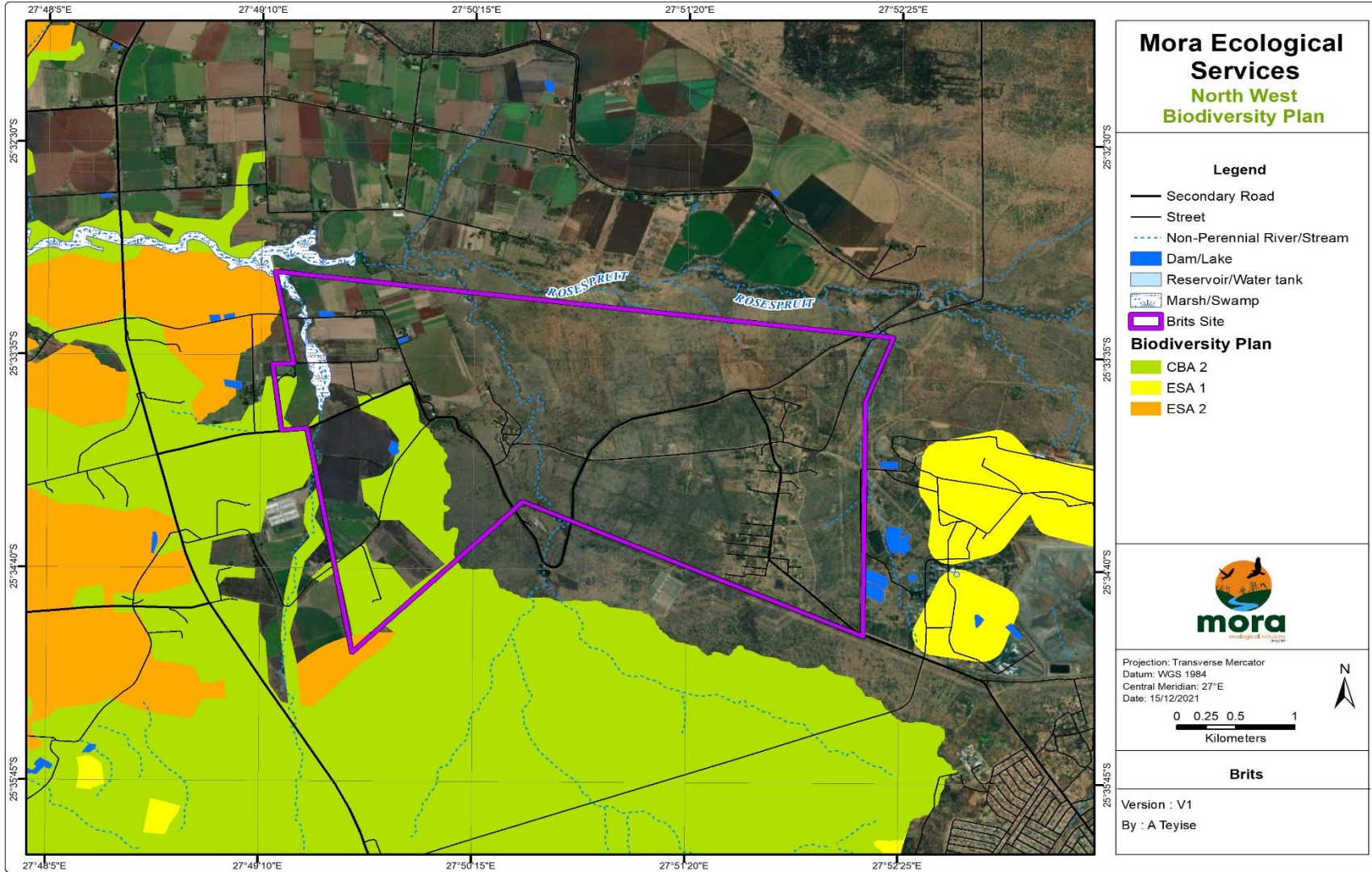


Figure 4: North West Biodiversity Sector Plan Map.

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 the site does not fall within any Important Bird Areas. The nearest IBA is approximately 6 km south of the site.

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.

5. 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

The site was observed to be of **Low-Medium Ecological Function**. Most of the habitats were transformed by crop farming. Sensitive areas are associated with watercourses which are tributaries of Rosespruit river. In addition, there is also a concrete canal traversing the site, which is used for irrigation purposes. These watercourses should be avoided during all phases of the project (Fig 5).

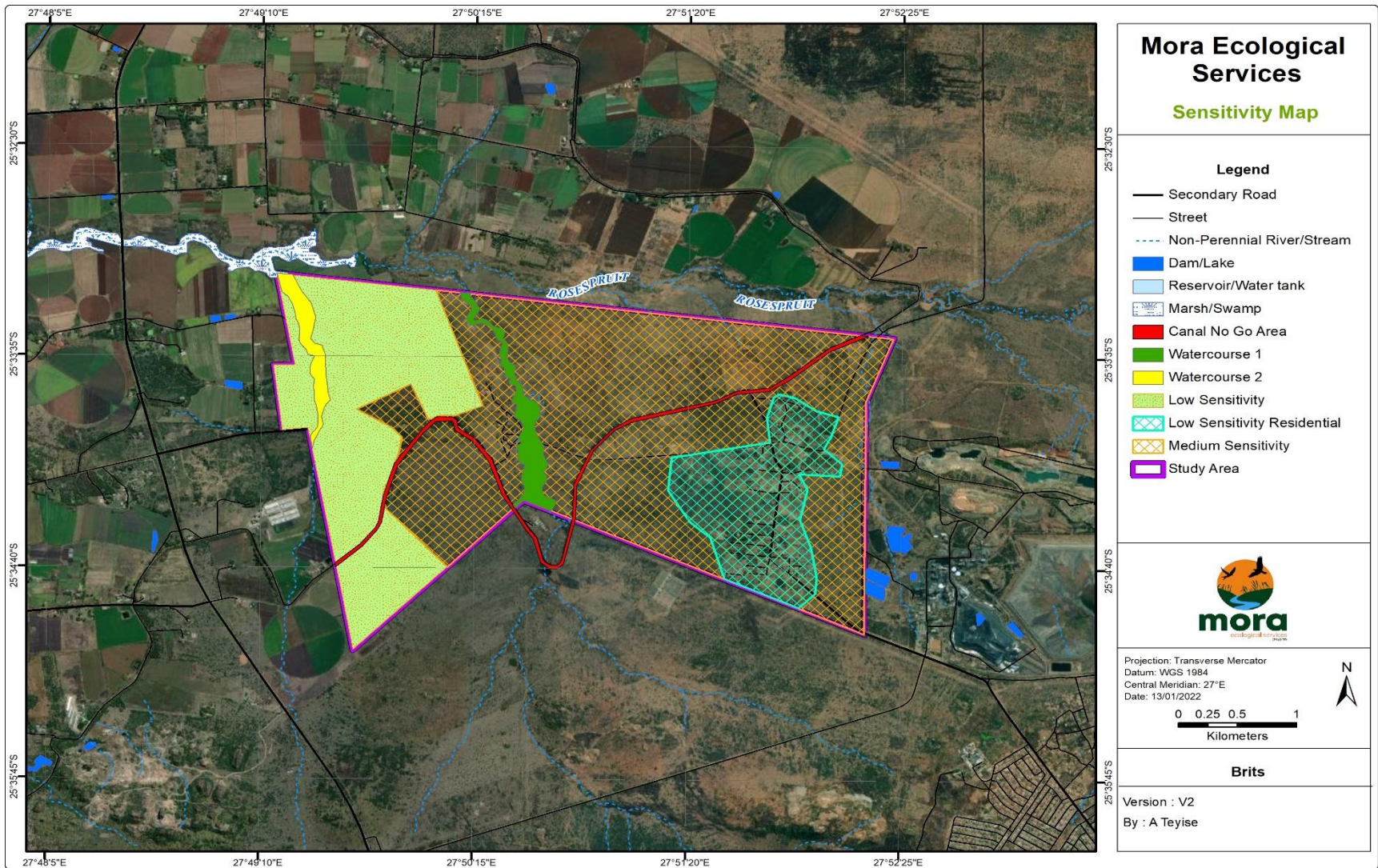


Figure 5: Site Sensitivity Map.

6. 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>Ziziphus mucronata</i>	Buffalo Thorn Tree	Tree	LC
<i>Vachellia karroo</i>	Sweet thorn	Tree	LC
<i>Asparagus laricinus</i>	Bergkatbos	Shrub	LC
<i>Aloe greatheadii</i> var <i>davyana</i>	Spotted aloe	Succulent	LC
<i>Gomphocarpus fruticosus</i>	Milkweed	Shrub	LC
<i>Cynodon dactylon</i>	Bermuda Grass	Grass	LC
<i>Eragrostis curvula</i>	Weeping Love Grass	Grass	LC
<i>Hyparrhenia hirta</i>	Common Thatching Grass	Grass	LC
<i>Setaria sphacelata</i>	Common Bristle Grass	Grass	LC
<i>Aristida congesta</i> subsp. <i>Congesta</i>	Tassel Three-awn	Grass	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>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>Vanellus armatus</i>	Blacksmith Lapwing	LC
<i>Ardea melanocephala</i>	Black-headed Heron	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
<i>Numida meleagris</i>	Hlemeted Guineafowl	LC
<i>Cinnyris talatala</i>	White-bellied Sunbird	LC
<i>Trachyphonus vainnantii</i>	Crested barbet	LC
<i>Tockus leucomelas</i>	Southern Yellow-billed Hornbill	LC
<i>Dicrurus adsimilis</i>	Fork-tailed Drongo	LC
<i>Spilopelia senegalensis</i>	Laughing dove	LC

Mammals

No mammal species were observed during the survey. The area is near an existing mine, farming area and villages.

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.

7. IMPACT ASSESSMENT AND MITIGATIONS

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.

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: Impacts on watercourses The major impact during this phase may result from infilling and impediment of watercourses if drilling occurs near the watercourse and canal that traverse the site.							
	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: 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. No Red Data plants were encountered.						
Can impact be avoided, managed or mitigated?	Yes. 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. 							

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. 							

8. 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.

9. CONCLUSION AND RECOMMENDATIONS

There are several habitats within the proposed site that have been exposed to high levels of disturbance resulting from farming activities 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 terrestrial biodiversity and aquatic studies are recommended.

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11. 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)	2	1979-06-29
2	Bathyergidae	<i>Cryptomys mahali</i>	Mahali's Mole-rat	Data Deficient (IUCN, 2019)	4	2019-12-29
3	Bovidae	<i>Aepyceros melampus</i>	Impala	Least Concern	6	2011-07-26
4	Bovidae	<i>Alcelaphus buselaphus</i>	Hartebeest		3	2010-09-28
5	Bovidae	<i>Connochaetes taurinus</i>	Blue Wildebeest	Least Concern (ver 3.1, 2017)	1	2021-07-04
6	Bovidae	<i>Connochaetes taurinus taurinus</i>		Least Concern (2016)	4	2010-09-28
7	Bovidae	<i>Damaliscus pygargus phillipsi</i>	Blesbok	Least Concern (2016)	5	2017-05-01
8	Bovidae	<i>Kobus ellipsiprymnus ellipsiprymnus</i>		Least Concern (2016)	3	2010-09-28
9	Bovidae	<i>Raphicerus campestris</i>	Steenbok	Least Concern (2016)	1	
10	Bovidae	<i>Sylvicapra grimmia</i>	Bush Duiker	Least Concern (2016)	2	
11	Bovidae	<i>Taurotragus oryx</i>	Common Eland	Least Concern (2016)	2	2011-07-28
12	Bovidae	<i>Tragelaphus strepsiceros</i>	Greater Kudu	Least Concern (2016)	5	2010-09-28
13	Canidae	<i>Canis mesomelas</i>	Black-backed Jackal	Least Concern (2016)	5	2011-07-30
14	Canidae	<i>Lycaon pictus</i>	African wild dog	Endangered (2016)	1	2021-07-04
15	Cercopithecidae	<i>Chlorocebus pygerythrus</i>	Vervet Monkey	Least Concern (2016)	2	2017-02-28
16	Cercopithecidae	<i>Papio ursinus</i>	Chacma Baboon	Least Concern (2016)	2	2011-07-28
17	Equidae	<i>Equus quagga</i>	Plains Zebra	Least Concern (2016)	5	2021-07-04
18	Erinaceidae	<i>Atelerix frontalis</i>	Southern African Hedgehog	Near Threatened (2016)	3	2014-11-21
19	Felidae	<i>Acinonyx jubatus</i>	Cheetah	Vulnerable (2016)	1	2021-07-04
20	Felidae	<i>Caracal caracal</i>	Caracal	Least Concern (2016)	1	
21	Felidae	<i>Felis silvestris</i>	Wildcat	Least Concern (2016)	3	1915-03-16
22	Felidae	<i>Leptailurus serval</i>	Serval	Near Threatened (2016)	1	2021-07-04
23	Giraffidae	<i>Giraffa giraffa giraffa</i>	South African Giraffe	Least Concern (2016)	2	2010-09-28
24	Gliridae	<i>Graphiurus (Graphiurus) murinus</i>	Forest African Dormouse	Least Concern	5	2003-02-26
25	Herpestidae	<i>Atilax paludinosus</i>	Marsh Mongoose	Least Concern (2016)	1	2011-07-28

26	Hyaenidae	<i>Crocuta crocuta</i>	Spotted Hyaena	Near Threatened (2016)	1	2021-07-04
27	Hyaenidae	<i>Proteles cristata</i>	Aardwolf	Least Concern (2016)	3	2011-07-29
28	Hystricidae	<i>Hystrix africaeaustralis</i>	Cape Porcupine	Least Concern	1	2016-11-24
29	Leporidae	<i>Lepus saxatilis</i>	Scrub Hare	Least Concern	5	2017-03-11
30	Leporidae	<i>Pronolagus sp.</i>	Rock-hares		2	2011-07-28
31	Macroscelididae	<i>Elephantulus myurus</i>	Eastern Rock Elephant Shrew	Least Concern (2016)	2	2011-07-28
32	Manidae	<i>Smutsia temminckii</i>	Ground Pangolin	Vulnerable (2016)	1	
33	Molossidae	<i>Sauromys petrophilus</i>	Roberts's Flat-headed Bat	Least Concern (2016)	3	1978-04-18
34	Muridae	<i>Aethomys ineptus</i>	Tete Veld Aethomys	Least Concern (2016)	8	2011-07-28
35	Muridae	<i>Aethomys namaquensis</i>	Namaqua Rock Mouse	Least Concern	5	2011-07-29
36	Muridae	<i>Gerbilliscus leucogaster</i>	Bushveld Gerbil	Least Concern (2016)	1	1950-04-07
37	Muridae	<i>Mus (Nannomys) minutoides</i>	Southern African Pygmy Mouse	Least Concern	1	1987-03-26
38	Muridae	<i>Rattus rattus</i>	Roof Rat	Least Concern	1	1934-10-16
39	Procaviidae	<i>Procavia capensis</i>	Cape Rock Hyrax	Least Concern (2016)	1	2011-07-26
40	Pteropodidae	<i>Epomophorus wahlbergi</i>	Wahlberg's Epauletted Fruit Bat	Least Concern (2016)	3	2020-04-23
41	Rhinolophidae	<i>Rhinolophus darlingi</i>	Darling's Horseshoe Bat	Least Concern (2016)	6	1973-06-10
42	Sciuridae	<i>Paraxerus cepapi</i>	Smith's Bush Squirrel	Least Concern (2016)	5	2021-07-04
43	Soricidae	<i>Crocidura fuscomurina</i>	Bicolored Musk Shrew	Least Concern (2016)	5	1987-03-26
44	Soricidae	<i>Suncus infinitesimus</i>	Least Dwarf Shrew	Least Concern (2016)	1	1987-03-26
45	Suidae	<i>Phacochoerus aethiopicus</i>	Desert Warthog		1	
46	Vespertilionidae	<i>Myotis tricolor</i>	Temminck's Myotis	Least Concern (2016)	2	
47	Vespertilionidae	<i>Scotophilus dinganii</i>	Yellow-bellied House Bat	Least Concern (2016)	2	1973-02-24
48	Viveridae	<i>Genetta maculata</i>	Common Large-spotted Genet	Least Concern	1	2011-07-29
49	Viverridae	<i>Genetta genetta</i>	Common Genet	Least Concern (2016)	1	
50	Viverridae	<i>Genetta tigrina</i>	Cape Genet (Cape Large-spotted Genet)	Least Concern (2016)	2	2011-07-29

B, Reptile Records. Animal Demographic Unit.

No	Family	Scientific name	Common name	Red list category	Number of records	Last recorded
1	Agamidae	<i>Acanthocercus atricollis</i>	Southern Tree Agama	Least Concern (SARCA 2014)	3	2017-10-22
2	Agamidae	<i>Agama aculeata distanti</i>	Distant's Ground Agama	Least Concern (SARCA 2014)	3	1900-06-15
3	Agamidae	<i>Agama atra</i>	Southern Rock Agama	Least Concern (SARCA 2014)	17	2019-10-16
4	Chamaeleonidae	<i>Chamaeleo dilepis</i>	Common Flap-neck Chameleon	Least Concern (SARCA 2014)	6	2015-12-26
5	Colubridae	<i>Crotaphopeltis hotamboeia</i>	Red-lipped Snake	Least Concern (SARCA 2014)	2	1900-06-15
6	Colubridae	<i>Dasypeltis scabra</i>	Rhombic Egg-eater	Least Concern (SARCA 2014)	5	2017-12-23
7	Colubridae	<i>Dispholidus typus viridis</i>	Northern Boomslang	Not evaluated	1	1900-06-15
8	Colubridae	<i>Philothamnus hoplogaster</i>	South Eastern Green Snake	Least Concern (SARCA 2014)	1	1900-06-15
9	Colubridae	<i>Philothamnus semivariiegatus</i>	Spotted Bush Snake	Least Concern (SARCA 2014)	5	2017-09-24
10	Colubridae	<i>Telescopus semiannulatus semiannulatus</i>	Eastern Tiger Snake	Least Concern (SARCA 2014)	6	1982-09-23
11	Cordylidae	<i>Cordylus jonesii</i>	Jones' Girdled Lizard	Least Concern (SARCA 2014)	1	1986-01-29
12	Cordylidae	<i>Cordylus vittifer</i>	Common Girdled Lizard	Least Concern (SARCA 2014)	4	2015-12-12
13	Elapidae	<i>Elapsoidea sundevallii media</i>	Highveld Garter Snake		1	1900-06-15
14	Elapidae	<i>Naja annulifera</i>	Snouted Cobra	Least Concern (SARCA 2014)	11	2016-11-23
15	Elapidae	<i>Naja mossambica</i>	Mozambique Spitting Cobra	Least Concern (SARCA 2014)	2	2021-04-03
16	Gekkonidae	<i>Chondrodactylus turneri</i>	Turner's Gecko	Least Concern (SARCA 2014)	1	1900-06-15
17	Gekkonidae	<i>Hemidactylus mabouia</i>	Common Tropical House Gecko	Least Concern (SARCA 2014)	8	2021-04-05
18	Gekkonidae	<i>Lygodactylus capensis</i>	Common Dwarf Gecko	Least Concern (SARCA 2014)	7	2020-04-30
19	Gekkonidae	<i>Pachydactylus affinis</i>	Transvaal Gecko	Least Concern (SARCA 2014)	5	2016-07-10
20	Gekkonidae	<i>Pachydactylus capensis</i>	Cape Gecko	Least Concern (SARCA 2014)	2	1913-10-03
21	Gerrhosauridae	<i>Gerrhosaurus flavigularis</i>	Yellow-throated Plated Lizard	Least Concern (SARCA 2014)	4	2019-11-24
22	Lamprophiidae	<i>Aparallactus capensis</i>	Black-headed Centipede-eater	Least Concern (SARCA 2014)	1	1918-11-18
23	Lamprophiidae	<i>Boaedon capensis</i>	Brown House Snake	Least Concern (SARCA 2014)	4	2015-01-02
24	Lamprophiidae	<i>Duberria lutrix lutrix</i>	South African Slug-eater	Least Concern (SARCA 2014)	1	1900-06-15
25	Lamprophiidae	<i>Homoroselaps dorsalis</i>	Striped Harlequin Snake	Near Threatened (SARCA 2014)	1	1900-06-15
26	Lamprophiidae	<i>Lamprophis aurora</i>	Aurora House Snake	Least Concern (SARCA 2014)	2	1900-06-15
27	Lamprophiidae	<i>Lycodonormorphus rufulus</i>	Brown Water Snake	Least Concern (SARCA 2014)	2	1900-06-15
28	Lamprophiidae	<i>Lycophidion capense capense</i>	Cape Wolf Snake	Least Concern (SARCA 2014)	3	1982-09-25

29	Lamprophiidae	<i>Prosymna sundevallii</i>	Sundevall's Shovel-snout	Least Concern (SARCA 2014)	4	1916-05-05
30	Lamprophiidae	<i>Psammophis brevirostris</i>	Short-snouted Grass Snake	Least Concern (SARCA 2014)	7	2019-12-01
31	Lamprophiidae	<i>Psammophylax tritaeniatus</i>	Striped Grass Snake	Least Concern (SARCA 2014)	1	1900-06-15
32	Leptotyphlopidae	<i>Leptotyphlops incognitus</i>	Incognito Thread Snake	Least Concern (SARCA 2014)	1	1900-06-15
33	Pelomedusidae	<i>Pelomedusa galeata</i>	South African Marsh Terrapin	Not evaluated	1	1900-06-15
34	Pythonidae	<i>Python natalensis</i>	Southern African Python	Least Concern (SARCA 2014)	2	1900-06-15
35	Scincidae	<i>Acontias occidentalis</i>	Western Legless Skink	Least Concern (SARCA 2014)	2	1926-12-18
36	Scincidae	<i>Mochlus sundevallii</i>	Sundevall's Writhing Skink	Least Concern (SARCA 2014)	2	1993-10-03
37	Scincidae	<i>Panaspis wahlbergii</i>	Wahlberg's Snake-eyed Skink	Least Concern (SARCA 2014)	2	1900-06-15
38	Scincidae	<i>Trachylepis damarana</i>	Damara Variable Skink		2	2021-01-03
39	Scincidae	<i>Trachylepis punctatissima</i>	Speckled Rock Skink	Least Concern (SARCA 2014)	5	2020-04-13
40	Scincidae	<i>Trachylepis sp. (Transvaal varia)</i>	Skink sp. 1		1	1900-06-15
41	Scincidae	<i>Trachylepis varia sensu lato</i>	Common Variable Skink Complex	Least Concern (SARCA 2014)	5	2016-07-10
42	Typhlopidae	<i>Afrotrophlops bibronii</i>	Bibron's Blind Snake	Least Concern (SARCA 2014)	2	1900-06-15
43	Typhlopidae	<i>Rhinotyphlops lalandei</i>	Delalande's Beaked Blind Snake	Least Concern (SARCA 2014)	2	1900-06-15
44	Varanidae	<i>Varanus niloticus</i>	Water Monitor	Least Concern (SARCA 2014)	4	2017-09-21
45	Viperidae	<i>Bitis arietans arietans</i>	Puff Adder	Least Concern (SARCA 2014)	15	2013-01-12
46	Viperidae	<i>Causus rhombeatus</i>	Rhombic Night Adder	Least Concern (SARCA 2014)	2	1963-11-30

C, Frog Records, Animal Demographic Unit.

No	Family	Scientific name	Common name	Red list category	Number of records	Last recorded
1	Brevicipitidae	<i>Breviceps adspersus</i>	Bushveld Rain Frog	Least Concern	1	1999-11-18
2	Bufo	<i>Schismaderma carens</i>	Red Toad	Least Concern	10	2020-07-17
3	Bufo	<i>Sclerophrys garmani</i>	Olive Toad	Least Concern (IUCN, 2016)	4	2000-01-06
4	Bufo	<i>Sclerophrys gutturalis</i>	Guttural Toad	Least Concern (IUCN, 2016)	5	2000-01-06
5	Bufo	<i>Sclerophrys poweri</i>	Power's Toad	Least Concern	1	1999-11-18
6	Hyperoliidae	<i>Kassina senegalensis</i>	Bubbling Kassina	Least Concern	4	2000-01-06
7	Microhylidae	<i>Phrynomantis bifasciatus</i>	Banded Rubber Frog	Least Concern	2	2000-01-05
8	Phrynobatrachidae	<i>Phrynobatrachus natalensis</i>	Snoring Puddle Frog	Least Concern (IUCN, 2013)	1	1913-10-03
9	Pipidae	<i>Xenopus laevis</i>	Common Platanna	Least Concern	1	1970-04-22
10	Ptychadenidae	<i>Ptychadena anchietae</i>	Plain Grass Frog	Least Concern	1	2000-01-05
11	Pyxicephalidae	<i>Amietia delalandii</i>	Delalande's River Frog	Least Concern (2017)	7	2019-06-15
12	Pyxicephalidae	<i>Cacosternum boettgeri</i>	Common Caco	Least Concern (2013)	1	2000-01-05
13	Pyxicephalidae	<i>Pyxicephalus adspersus</i>	Giant Bull Frog	Near Threatened	2	2017-03-03
14	Pyxicephalidae	<i>Tomopterna cryptotis</i>	Tremelo Sand Frog	Least Concern	3	2016-11-18
15	Pyxicephalidae	<i>Tomopterna natalensis</i>	Natal Sand Frog	Least Concern	2	2000-01-05

E, Avifaunal Records. SABAP2, Animal Demographic Unit.

No	Common group	Common species	Genus	Species
1		Bokmakierie	<i>Telophorus</i>	<i>zeylonus</i>
2		Brubru	<i>Nilaus</i>	<i>afer</i>
3		Hamerkop	<i>Scopus</i>	<i>umbretta</i>
4		Neddicky	<i>Cisticola</i>	<i>fulvicapilla</i>
5		Quailfinch	<i>Ortygospiza</i>	<i>atricollis</i>
6		Ruff	<i>Calidris</i>	<i>pugnax</i>
7	Babbler	Arrow-marked	<i>Turdoides</i>	<i>jardineii</i>
8	Babbler	Southern Pied	<i>Turdoides</i>	<i>bicolor</i>
9	Barbet	Acacia Pied	<i>Tricholaema</i>	<i>leucomelas</i>
10	Barbet	Black-collared	<i>Lybius</i>	<i>torquatus</i>
11	Barbet	Crested	<i>Trachyphonus</i>	<i>vallantii</i>
12	Batis	Chinspot	<i>Batis</i>	<i>molitor</i>
13	Bee-eater	European	<i>Merops</i>	<i>apiaster</i>
14	Bee-eater	White-fronted	<i>Merops</i>	<i>bullockoides</i>
15	Bishop	Southern Red	<i>Euplectes</i>	<i>orix</i>
16	Bishop	Yellow-crowned	<i>Euplectes</i>	<i>afer</i>
17	Boubou	Southern	<i>Laniarius</i>	<i>ferrugineus</i>
18	Bulbul	Dark-capped	<i>Pycnonotus</i>	<i>tricolor</i>
19	Bunting	Cinnamon-breasted	<i>Emberiza</i>	<i>tahapisi</i>
20	Bunting	Golden-breasted	<i>Emberiza</i>	<i>flaviventris</i>
21	Bunting	Lark-like	<i>Emberiza</i>	<i>impetuani</i>
22	Bushshrike	Orange-breasted	<i>Chlorophoneus</i>	<i>sulfureopectus</i>
23	Buzzard	Common	<i>Buteo</i>	<i>buteo</i>
24	Camaropectera	Grey-backed	<i>Camaropectera</i>	<i>brevicaudata</i>
25	Canary	Black-throated	<i>Crithagra</i>	<i>atrogularis</i>
26	Canary	Yellow	<i>Crithagra</i>	<i>flaviventris</i>
27	Canary	Yellow-fronted	<i>Crithagra</i>	<i>mozambica</i>
28	Chat	Familiar	<i>Oenanthe</i>	<i>familiaris</i>
29	Cisticola	Desert	<i>Cisticola</i>	<i>aridulus</i>
30	Cisticola	Levaillant's	<i>Cisticola</i>	<i>tinniens</i>
31	Cisticola	Rattling	<i>Cisticola</i>	<i>chiniana</i>
32	Cisticola	Zitting	<i>Cisticola</i>	<i>juncidis</i>
33	Coot	Red-knobbed	<i>Fulica</i>	<i>cristata</i>
34	Cormorant	Reed	<i>Microcarbo</i>	<i>africanus</i>
35	Cormorant	White-breasted	<i>Phalacrocorax</i>	<i>lucidus</i>
36	Coucal	Burchell's	<i>Centropus</i>	<i>burchellii</i>
37	Courser	Temminck's	<i>Cursorius</i>	<i>temminckii</i>

No	Common group	Common species	Genus	Species
38	Crake	Black	<i>Zapornia</i>	<i>flavirostra</i>
39	Crombec	Long-billed	<i>Sylvietta</i>	<i>rufescens</i>
40	Crow	Pied	<i>Corvus</i>	<i>albus</i>
41	Cuckoo	Black	<i>Cuculus</i>	<i>clamosus</i>
42	Cuckoo	Diederik	<i>Chrysococcyx</i>	<i>caprius</i>
43	Cuckoo	Jacobin	<i>Clamator</i>	<i>jacobinus</i>
44	Cuckoo	Red-chested	<i>Cuculus</i>	<i>solitarius</i>
45	Dove	Cape Turtle	<i>Streptopelia</i>	<i>capicola</i>
46	Dove	Laughing	<i>Spilopelia</i>	<i>senegalensis</i>
47	Dove	Namaqua	<i>Oena</i>	<i>capensis</i>
48	Dove	Red-eyed	<i>Streptopelia</i>	<i>semitorquata</i>
49	Dove	Rock	<i>Columba</i>	<i>livia</i>
50	Drongo	Fork-tailed	<i>Dicrurus</i>	<i>adsimilis</i>
51	Duck	African Black	<i>Anas</i>	<i>sparsa</i>
52	Duck	Knob-billed	<i>Sarkidiornis</i>	<i>melanotos</i>
53	Duck	White-backed	<i>Thalassornis</i>	<i>leuconotus</i>
54	Duck	White-faced Whistling	<i>Dendrocygna</i>	<i>viduata</i>
55	Duck	Yellow-billed	<i>Anas</i>	<i>undulata</i>
56	Eagle	Black-chested Snake	<i>Circaetus</i>	<i>pectoralis</i>
57	Egret	Great	<i>Ardea</i>	<i>alba</i>
58	Egret	Intermediate	<i>Ardea</i>	<i>intermedia</i>
59	Egret	Little	<i>Egretta</i>	<i>garzetta</i>
60	Egret	Western Cattle	<i>Bubulcus</i>	<i>ibis</i>
61	Eremomela	Burnt-necked	<i>Eremomela</i>	<i>usticollis</i>
62	Falcon	Amur	<i>Falco</i>	<i>amurensis</i>
63	Falcon	Lanner	<i>Falco</i>	<i>biarmicus</i>
64	Finch	Cut-throat	<i>Amadina</i>	<i>fasciata</i>
65	Finch	Red-headed	<i>Amadina</i>	<i>erythrocephala</i>
66	Firefinch	Jameson's	<i>Lagonosticta</i>	<i>rhodopareia</i>
67	Firefinch	Red-billed	<i>Lagonosticta</i>	<i>senegala</i>
68	Fiscal	Southern	<i>Lanius</i>	<i>collaris</i>
69	Flycatcher	African Paradise	<i>Terpsiphone</i>	<i>viridis</i>
70	Flycatcher	Fiscal	<i>Melaenornis</i>	<i>silens</i>
71	Flycatcher	Marico	<i>Melaenornis</i>	<i>mariquensis</i>
72	Flycatcher	Southern Black	<i>Melaenornis</i>	<i>pammelaina</i>
73	Flycatcher	Spotted	<i>Muscicapa</i>	<i>striata</i>
74	Francolin	Coqui	<i>Peliperdix</i>	<i>coqui</i>
75	Francolin	Crested	<i>Dendroperdix</i>	<i>sephaena</i>

No	Common group	Common species	Genus	Species
76	Go-away-bird	Grey	<i>Crinifer</i>	<i>concolor</i>
77	Goose	Egyptian	<i>Alopochen</i>	<i>aegyptiaca</i>
78	Goose	Spur-winged	<i>Plectropterus</i>	<i>gambensis</i>
79	Goshawk	Gabar	<i>Micronisus</i>	<i>gabar</i>
80	Goshawk	Pale Chanting	<i>Melierax</i>	<i>canorus</i>
81	Grebe	Little	<i>Tachybaptus</i>	<i>ruficollis</i>
82	Greenshank	Common	<i>Tringa</i>	<i>nebularia</i>
83	Guineafowl	Helmeted	<i>Numida</i>	<i>meleagris</i>
84	Heron	Black-headed	<i>Ardea</i>	<i>melanocephala</i>
85	Heron	Grey	<i>Ardea</i>	<i>cinerea</i>
86	Heron	Purple	<i>Ardea</i>	<i>purpurea</i>
87	Heron	Squacco	<i>Ardeola</i>	<i>ralloides</i>
88	Heron	Striated	<i>Butorides</i>	<i>striata</i>
89	Honeyguide	Lesser	<i>Indicator</i>	<i>minor</i>
90	Hoopoe	African	<i>Upupa</i>	<i>africana</i>
91	Hornbill	African Grey	<i>Lophoceros</i>	<i>nasutus</i>
92	Hornbill	Southern Red-billed	<i>Tockus</i>	<i>rufirostris</i>
93	Hornbill	Southern Yellow-billed	<i>Tockus</i>	<i>leucomelas</i>
94	Ibis	African Sacred	<i>Threskiornis</i>	<i>aethiopicus</i>
95	Ibis	Glossy	<i>Plegadis</i>	<i>falcinellus</i>
96	Ibis	Hadada	<i>Bostrychia</i>	<i>hagedash</i>
97	Indigobird	Purple	<i>Vidua</i>	<i>purpurascens</i>
98	Indigobird	Village	<i>Vidua</i>	<i>chalybeata</i>
99	Kestrel	Lesser	<i>Falco</i>	<i>naumanni</i>
100	Kingfisher	Brown-hooded	<i>Halcyon</i>	<i>albiventris</i>
101	Kingfisher	Giant	<i>Megaceryle</i>	<i>maxima</i>
102	Kingfisher	Malachite	<i>Corythornis</i>	<i>cristatus</i>
103	Kingfisher	Pied	<i>Ceryle</i>	<i>rudis</i>
104	Kingfisher	Woodland	<i>Halcyon</i>	<i>senegalensis</i>
105	Kite	Black-winged	<i>Elanus</i>	<i>caeruleus</i>
106	Korhaan	Northern Black	<i>Afrotis</i>	<i>afraoides</i>
107	Lapwing	African Wattled	<i>Vanellus</i>	<i>senegallus</i>
108	Lapwing	Blacksmith	<i>Vanellus</i>	<i>armatus</i>
109	Lapwing	Crowned	<i>Vanellus</i>	<i>coronatus</i>
110	Lark	Monotonous	<i>Mirafra</i>	<i>passerina</i>
111	Lark	Rufous-naped	<i>Mirafra</i>	<i>africana</i>
112	Lark	Sabota	<i>Calendulauda</i>	<i>sabota</i>
113	Longclaw	Cape	<i>Macronyx</i>	<i>capensis</i>

No	Common group	Common species	Genus	Species
114	Mannikin	Bronze	<i>Spermestes</i>	<i>cucullata</i>
115	Martin	Banded	<i>Riparia</i>	<i>cincta</i>
116	Martin	Brown-throated	<i>Riparia</i>	<i>paludicola</i>
117	Martin	Rock	<i>Ptyonoprogne</i>	<i>fuligula</i>
118	Moorhen	Common	<i>Gallinula</i>	<i>chloropus</i>
119	Moorhen	Lesser	<i>Paragallinula</i>	<i>angulata</i>
120	Mousebird	Red-faced	<i>Urocolius</i>	<i>indicus</i>
121	Mousebird	Speckled	<i>Colius</i>	<i>striatus</i>
122	Mousebird	White-backed	<i>Colius</i>	<i>colius</i>
123	Myna	Common	<i>Acridotheres</i>	<i>tristis</i>
124	Oriole	Black-headed	<i>Oriolus</i>	<i>larvatus</i>
125	Owl	Marsh	<i>Asio</i>	<i>capensis</i>
126	Owlet	Pearl-spotted	<i>Glaucidium</i>	<i>perlatum</i>
127	Oxpecker	Red-billed	<i>Buphagus</i>	<i>erythrorhynchus</i>
128	Painted-snipe	Greater	<i>Rostratula</i>	<i>benghalensis</i>
129	Pigeon	Speckled	<i>Columba</i>	<i>guinea</i>
130	Pipit	African	<i>Anthus</i>	<i>cinnamomeus</i>
131	Pipit	Buffy	<i>Anthus</i>	<i>vaalensis</i>
132	Plover	Three-banded	<i>Charadrius</i>	<i>tricoloris</i>
133	Pochard	Southern	<i>Netta</i>	<i>erythrophthalma</i>
134	Prinia	Black-chested	<i>Prinia</i>	<i>flavicans</i>
135	Prinia	Tawny-flanked	<i>Prinia</i>	<i>subflava</i>
136	Pytilia	Green-winged	<i>Pytilia</i>	<i>melba</i>
137	Quail	Harlequin	<i>Coturnix</i>	<i>delegorguei</i>
138	Quelea	Red-billed	<i>Quelea</i>	<i>quelea</i>
139	Robin-Chat	Cape	<i>Cossypha</i>	<i>caffra</i>
140	Robin-Chat	White-throated	<i>Cossypha</i>	<i>humeralis</i>
141	Roller	European	<i>Coracias</i>	<i>garrulus</i>
142	Roller	Lilac-breasted	<i>Coracias</i>	<i>caudatus</i>
143	Sandpiper	Common	<i>Actitis</i>	<i>hypoleucos</i>
144	Sandpiper	Marsh	<i>Tringa</i>	<i>stagnatilis</i>
145	Sandpiper	Wood	<i>Tringa</i>	<i>glareola</i>
146	Scrub Robin	Kalahari	<i>Cercotrichas</i>	<i>paena</i>
147	Scrub Robin	White-browed	<i>Cercotrichas</i>	<i>leucophrys</i>
148	Seedeater	Streaky-headed	<i>Crithagra</i>	<i>gularis</i>
149	Shoveler	Cape	<i>Spatula</i>	<i>smithii</i>
150	Shrike	Crimson-breasted	<i>Laniarius</i>	<i>atrococcineus</i>
151	Shrike	Lesser Grey	<i>Lanius</i>	<i>minor</i>

No	Common group	Common species	Genus	Species
152	Shrike	Magpie	<i>Urolestes</i>	<i>melanoleucus</i>
153	Shrike	Red-backed	<i>Lanius</i>	<i>collurio</i>
154	Shrike	Southern White-crowned	<i>Eurocephalus</i>	<i>anguitimens</i>
155	Snipe	African	<i>Gallinago</i>	<i>nigripennis</i>
156	Sparrow	Cape	<i>Passer</i>	<i>melanurus</i>
157	Sparrow	Great	<i>Passer</i>	<i>motitensis</i>
158	Sparrow	House	<i>Passer</i>	<i>domesticus</i>
159	Sparrow	Southern Grey-headed	<i>Passer</i>	<i>diffusus</i>
160	Sparrow-Weaver	White-browed	<i>Plocepasser</i>	<i>mahali</i>
161	Spoonbill	African	<i>Platalea</i>	<i>alba</i>
162	Spurfowl	Natal	<i>Pternistis</i>	<i>natalensis</i>
163	Spurfowl	Swainson's	<i>Pternistis</i>	<i>swainsonii</i>
164	Starling	Cape	<i>Lamprotornis</i>	<i>nitens</i>
165	Starling	Red-winged	<i>Onychognathus</i>	<i>morio</i>
166	Starling	Wattled	<i>Creatophora</i>	<i>cinerea</i>
167	Stilt	Black-winged	<i>Himantopus</i>	<i>himantopus</i>
168	Stonechat	African	<i>Saxicola</i>	<i>torquatus</i>
169	Stork	White	<i>Ciconia</i>	<i>ciconia</i>
170	Sunbird	Amethyst	<i>Chalcomitra</i>	<i>amethystina</i>
171	Sunbird	Marico	<i>Cinnyris</i>	<i>mariquensis</i>
172	Sunbird	White-bellied	<i>Cinnyris</i>	<i>talatala</i>
173	Swallow	Barn	<i>Hirundo</i>	<i>rustica</i>
174	Swallow	Greater Striped	<i>Cecropis</i>	<i>cucullata</i>
175	Swallow	Lesser Striped	<i>Cecropis</i>	<i>abyssinica</i>
176	Swallow	Pearl-breasted	<i>Hirundo</i>	<i>dimidiata</i>
177	Swallow	Red-breasted	<i>Cecropis</i>	<i>semirufa</i>
178	Swallow	South African Cliff	<i>Petrochelidon</i>	<i>spilodera</i>
179	Swallow	White-throated	<i>Hirundo</i>	<i>albigularis</i>
180	Swamphen	African	<i>Porphyrio</i>	<i>madagascariensis</i>
181	Swift	African Palm	<i>Cypsiurus</i>	<i>parvus</i>
182	Swift	Little	<i>Apus</i>	<i>affinis</i>
183	Swift	White-rumped	<i>Apus</i>	<i>caffer</i>
184	Tchagra	Black-crowned	<i>Tchagra</i>	<i>senegalus</i>
185	Tchagra	Brown-crowned	<i>Tchagra</i>	<i>australis</i>
186	Teal	Red-billed	<i>Anas</i>	<i>erythrorhyncha</i>
187	Thick-knee	Spotted	<i>Burhinus</i>	<i>capensis</i>
188	Thrush	Groundscraper	<i>Turdus</i>	<i>litsitsirupa</i>
189	Thrush	Karoo	<i>Turdus</i>	<i>smithi</i>

No	Common group	Common species	Genus	Species
190	Thrush	Kurrichane	<i>Turdus</i>	<i>libonyana</i>
191	Tinkerbird	Yellow-fronted	<i>Pogoniulus</i>	<i>chrysoconus</i>
192	Tit	Ashy	<i>Melaniparus</i>	<i>cinerascens</i>
193	Tit	Southern Black	<i>Melaniparus</i>	<i>niger</i>
194	Tit-Flycatcher	Grey	<i>Myioparus</i>	<i>plumbeus</i>
195	Wagtail	Cape	<i>Motacilla</i>	<i>capensis</i>
196	Warbler	African Reed	<i>Acrocephalus</i>	<i>baeticatus</i>
197	Warbler	Chestnut-vented	<i>Curruca</i>	<i>subcoerulea</i>
198	Warbler	Great Reed	<i>Acrocephalus</i>	<i>arundinaceus</i>
199	Warbler	Lesser Swamp	<i>Acrocephalus</i>	<i>gracilirostris</i>
200	Warbler	Little Rush	<i>Bradypterus</i>	<i>baboecala</i>
201	Warbler	Willow	<i>Phylloscopus</i>	<i>trochilus</i>
202	Waxbill	Black-faced	<i>Brunhilda</i>	<i>erythronotos</i>
203	Waxbill	Blue	<i>Uraeginthus</i>	<i>angolensis</i>
204	Waxbill	Common	<i>Estrilda</i>	<i>astrild</i>
205	Waxbill	Violet-eared	<i>Granatina</i>	<i>granatina</i>
206	Weaver	Red-billed Buffalo	<i>Bubalornis</i>	<i>niger</i>
207	Weaver	Scaly-feathered	<i>Sporopipes</i>	<i>squamifrons</i>
208	Weaver	Southern Masked	<i>Ploceus</i>	<i>velatus</i>
209	Weaver	Thick-billed	<i>Amblyospiza</i>	<i>albifrons</i>
210	Weaver	Village	<i>Ploceus</i>	<i>cucullatus</i>
211	White-eye	Cape	<i>Zosterops</i>	<i>virens</i>
212	Whydah	Long-tailed Paradise	<i>Vidua</i>	<i>paradisaea</i>
213	Whydah	Pin-tailed	<i>Vidua</i>	<i>macroura</i>
214	Whydah	Shaft-tailed	<i>Vidua</i>	<i>regia</i>
215	Widowbird	Long-tailed	<i>Euplectes</i>	<i>progne</i>
216	Widowbird	Red-collared	<i>Euplectes</i>	<i>ardens</i>
217	Widowbird	White-winged	<i>Euplectes</i>	<i>albonotatus</i>
218	Wood Hoopoe	Green	<i>Phoeniculus</i>	<i>purpureus</i>
219	Woodpecker	Cardinal	<i>Dendropicus</i>	<i>fuscescens</i>
220	Woodpecker	Golden-tailed	<i>Campethera</i>	<i>abingoni</i>



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