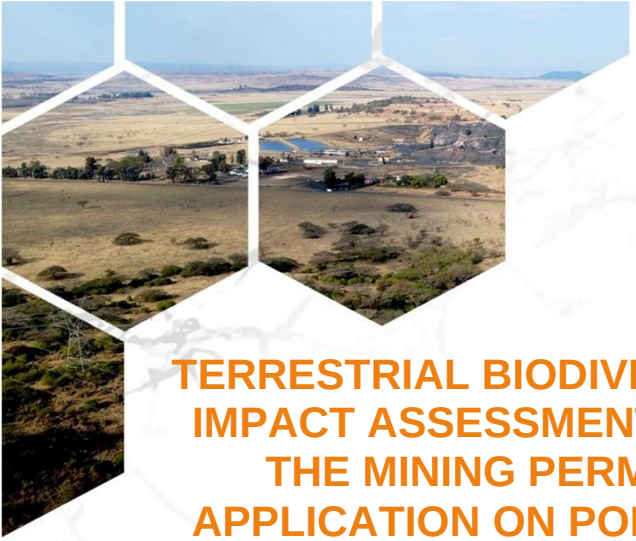
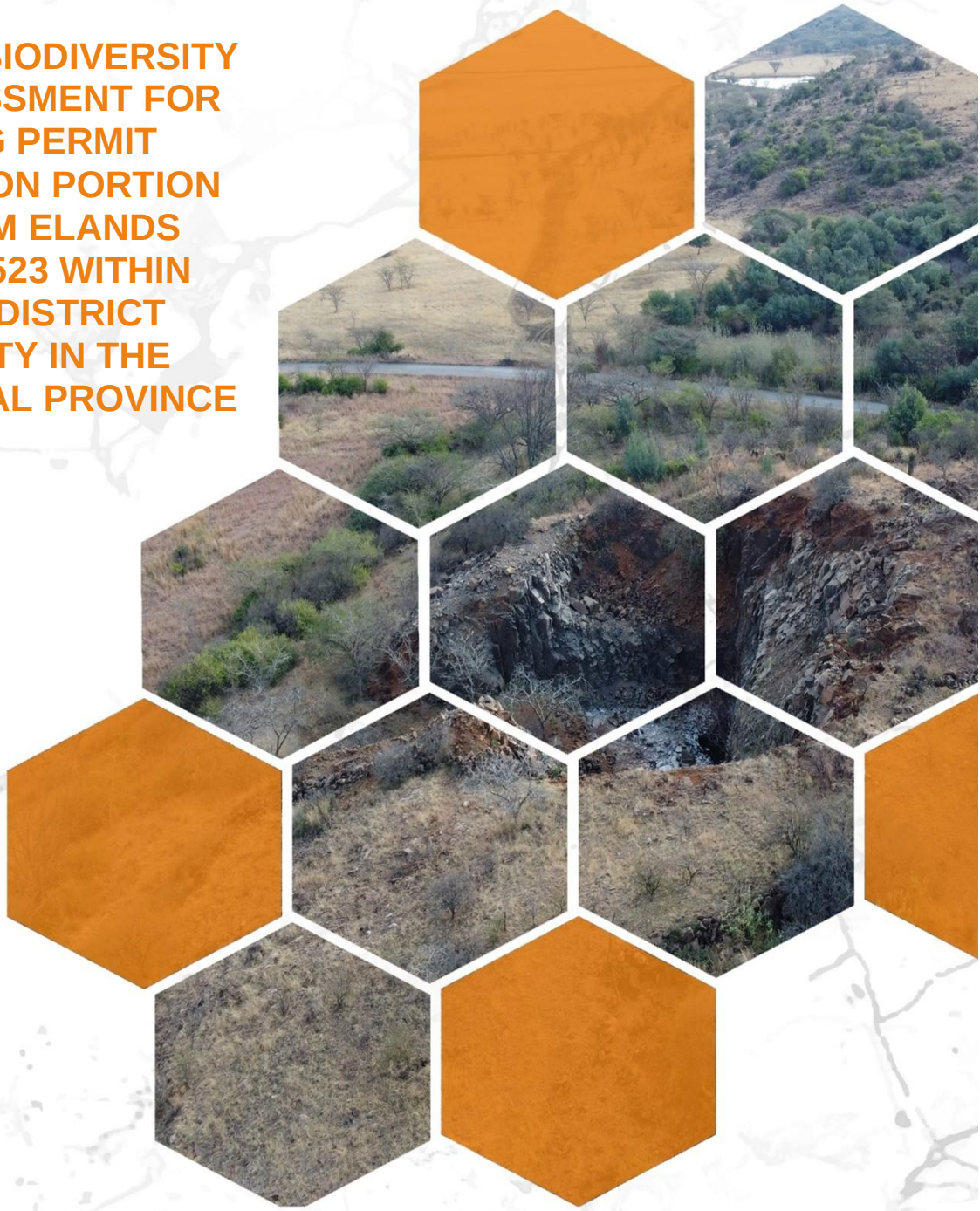


TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT FOR THE MINING PERMIT APPLICATION ON PORTION OF THE FARM ELANDS SPRUIT NO 5523 WITHIN UTHUKELA DISTRICT MUNICIPALITY IN THE KWAZULU-NATAL PROVINCE



Prepared for: Greenmined Environmental (Pty) Ltd
Prepared by: MORA Ecological Services (Pty) Ltd
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DOCUMENT CONTROL

Project title	TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT FOR THE MINING PERMIT APPLICATION ON PORTION OF THE FARM ELANDS SPRUIT NO 5523 WITHIN UTHUKELA DISTRICT MUNICIPALITY IN THE KWAZULU-NATAL PROVINCE
Report reference	GM/TBIA1122
Document prepared for	Greenmined Environmental (Pty) Ltd
Document prepared by	MORA Ecological Services (Pty) Ltd
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SPECIALIST INFORMATION AND LEGAL REQUIREMENTS

National Environmental Management Act, 1998 (Act No. 107 of 1998) and Environmental Impact Regulations 2014 (as amended) Requirements for Specialist Reports (Appendix 6) including Gazetted Specialist Assessment Protocol:

The details of -	Page No/Comment
○ the specialist who prepared the report; and	Page 6
○ the expertise of that specialist to compile a specialist report including a curriculum vitae;	Page 6
A declaration that the specialist is independent in a form as may be specified by the competent authority;	Page 10
An indication of the scope of, and the purpose for which, the report was prepared;	Page 11
○ An indication of the quality and age of base data used for the specialist report;	Page 24
○ A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Page 29
The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Page 24
A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Page 24
Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Page 15
An identification of any areas to be avoided, including buffers;	Page 15
A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Page 15
A description of any assumptions made and any uncertainties or gaps in knowledge;	Page 5
A description of the findings and potential implications of such findings on the impact of the proposed activity, or activities;	Page 26
Any mitigation measures for inclusion in the EMPr;	Page 29
Any conditions for inclusion in the environmental authorisation;	Page 41
Any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Page 25
A reasoned opinion-	
○ whether the proposed activity, activities or portions thereof should be authorised;	Page 26
○ regarding the acceptability of the proposed activity or activities; and	Page 29

○ if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Page 30
A description of any consultation process that was undertaken during the course of preparing the specialist report;	Not applicable
A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Not applicable
Any other information requested by the competent authority.	Not applicable
Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	Entire report

EXECUTIVE SUMMARY

Project background

Greenmined Environmental (Pty) Ltd has been appointed by Raubex Construction (Pty) Ltd to undertake the required environmental impact assessment process for the proposed mining application on portion of the Farm Elands Spruit No 5523 within uThukela District Municipality in the KwaZulu-Natal Province.

As part of the application process, MORA Ecological Services (Pty) Ltd was appointed by Greenmined Environmental (Pty) Ltd to conduct a terrestrial biodiversity impact assessment of the proposed activities. Access to the farm can be gained turning from the N11 onto the Collings Pass Road towards the Matiwane Village. The proposed site is located within the Alfred Duma Local Municipality.

The ecological diversity information from the desktop study and that was collected as part of our investigations will be used to inform the Government's review during the application process of the proposed development.

No other alternative sites were identified on the affected property(ies) for the development. The current study site is referred to as the preferred site. Some limited sensitive features occur on the site such as presence of Aloes. The size of the farm makes provision for the relocation of any sensitive plants to non-targeted areas.

TERMS OF REFERENCE

MORA Ecological Services (Pty) Ltd was requested by Greenmined Environmental (Pty) Ltd, hereafter referred to as "GM" to conduct a terrestrial biodiversity study towards their pursuit of obtaining the requisite environmental authorisations for the proposed mining permit. The critical objective of this specialist study is to determine the site sensitivity of the biodiversity of the site based on a desktop and field assessment, as well as mapping using the national vegetation classification system.

The main objective of the assessment was to include every species with the slightest chance of occurring within the site in the species list. The following tasks were undertaken by MORA Ecological Services (Pty) Ltd to achieve the assessment objective:

- A visual inspection of the study area was done before surveys were conducted.
- During the process different homogenous vegetation units were identified and subsequently surveyed on foot and by vehicle in order to determine the floristic composition of each unit.
- A plotless sampling method was used to record data.
- Walk transects to identify faunal species.
- Species identification was done following reputable checklists and field guides.

- Where necessary, plant material was collected and/or photographs taken of specimens for identification purposes.

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 potential impacts of mining permit application on the vegetation composition.
- The assessment of impacts was based on the current state of the primary environment currently .
- MORA Ecological Services (Pty) Ltd relied on Greenmined Environmental, as the EAP, to supply correct information on the site locality and extent, as well as project details which were assumed to be correct.
- It was assumed that the information contained in existing databases, reports and publications is correct.
- MORA reserves the right to amend this report, recommendations and/or conclusions at any stage should any additional or otherwise significant information come to light.

SPECIALIST DETAILS, CURRICULUM VITAE AND DECLARATION

The surveys and assessment were undertaken by Mokgatla Jerry Molepo and Kyrone Josiah

Curriculum vitae (Mokgatla Molepo)

EDUCATION:

- MSc Zoology, Nelson Mandela University (Percy FitzPatrick Institute of African Ornithology Centre of Excellence)

Research Project Topic: Foraging behaviour and thermal physiology in Cape Sugarbirds: sex-specific responses to temperature.

- BSc Honours in Zoology, University of Limpopo

Research Project Topic: Morphometrics and plumage variation in the South African Fiscal flycatcher *Sigelus silens* Shaw 1809.

- BSc Botany & Zoology, University of Venda
- Grade 12, Marobathota High School

CERTIFICATES:

- SASS5 Aquatic Biomonitoring, GroundTruth
- Hydropedology and Wetland Functioning, Terra Soil Science & Water Business Academy
- Section 21 (c) & (i) Water Use Authorisation Training, Department of Water and Sanitation
- Basic Project Management, Hudisa Business School

PROFESSIONAL MEMBERSHIP:

- South African Council for Natural Scientific Professions (SACNASP) – Professionally registered as Professional Natural Scientist. **Registration number:** 009509
- British Ecological Society (BES). **Membership number**: 1010709
- Zoological Society of Southern Africa (ZSSA). **Membership number**: 691

WORK EXPERIENCE:

- MORA Ecological Services (Pty) Ltd: April 2018 – Current, I am Biodiversity Specialist, and my duties include; (i) Conducting Biodiversity, Aquatic Impact Assessments, Rehabilitation (ii) Compilation of specialist reports.
- Arcus Consulting: May - November 2017, I was a subcontracted avifaunal surveyor for the proposed Highlands Wind Energy Farm, Somerset East, Eastern Cape.
- Centre for African Conservation Ecology (ACE), Nelson Mandela University: 2015 - 2016, I was a field guide/ environmental educator. Responsibilities: taking school learners on trial walks inside the Nelson Mandela University Nature Reserve.

- South African National Biodiversity Institute (SANBI): May – December 2014, I was a Zoological Systematics Technician. Responsibilities: (i) Insect identification and curation, and (ii) compiling the animal checklist of South Africa, (iii) Sourcing wildlife crime reports on endangered animals and plants for Barcode of Wildlife Project, (iv) Monitoring the bird population in the Botanical Garden.
- Department of Zoology, University of Venda: 2009 – 2013, I was a Research Assistant under Dr. T.C Munyai who was conducting a long-term research project which monitored the effects of climate change on biota and processes influencing ecosystem functioning and species diversity patterns.
- Percy FitzPatrick Institute of African Ornithology: March – April 2014, I was a Research Assistant under Dr. Rita Covas' Sociable Weaver Research Project. This is a long-term study which looks at the reproductive success of Sociable weavers at Benfontein Nature Reserve in Kimberley.

Key experience in specialist projects

Year	Project	Location:	Role(s)
2022	Avifaunal Impact Assessment for the proposed 132kV for Musina-Makhado Special Economic Zone North Site	Musina, Limpopo	Avifaunal Specialist/Ornithologist
2022	Avifaunal Impact Assessment for the proposed Khauta PV Solar including 44kV and 132kV Powerline	Welkom, Free State	Avifaunal Specialist/Ornithologist
2022	Avifaunal Impact Assessment for the proposed NAOS PV Solar including 132kV Powerline	Free State	Avifaunal Specialist/Ornithologist
2022	Preconstruction Avifaunal Assessment for the proposed Lichtenburg PV Solar including 132kV Powerline	Lichtenburg, North West	Avifaunal Specialist/Ornithologist
2022	Preconstruction Botanical Assessment for the proposed Lichtenburg PV Solar including 132kV Powerline	Lichtenburg, North West	Ecologist
2022	Biodiversity Assessment, Land Capability and Veld Condition Assessment for PPC Cement SA Slurry	Slurry, North West	Ecologist
2021	Avifaunal Impact Assessment for the proposed Upington-Aries 2x 400kV	Upington, Northern Cape	Avifaunal Specialist/Ornithologist
2021	Habitat Assessment Post Rehabilitation for PPC Cement SA Dwaalboom Factory	Dwaalboom, Limpopo	Ecologist
2021	Habitat Assessment Post Rehabilitation for Gibson Bay Wind Energy Farm	Humansdorp, Eastern Cape	Ecologist
2021	Wetland Rehabilitation for the sewer pipeline construction in Daveyton	Ekurhuleni East College Campus, Daveyton, Gauteng	Wetland Ecologist

2021	12 Months Wetland Rehabilitation Supervision for Ekangala Ext F Waterborne Sanitation Project	City of Tshwane Metropolitan Municipality, Ekangala, Gauteng	Aquatic Ecologist
2021	Bi-annual Aquatic Biomonitoring for Ekangala Ext F Waterborne Sanitation Project	City of Tshwane Metropolitan Municipality, Ekangala, Gauteng	Aquatic Ecologist
2021	12 Months Surface water and Groundwater monitoring for Ekangala Ext F Waterborne Sanitation Project	City of Tshwane Metropolitan Municipality, Ekangala, Gauteng	Aquatic Ecologist
2021	Estuarine Impact Assessments for the Proposed Mkhambathi and Mbotyi Beach Developments, Ingquza Hill Municipality, Eastern Cape	Ingquza Hill Municipality, Eastern Cape	Ecologist
2021	Botanical Search and Rescue Monitoring Report for A 140 Megawatt Roggeveld Wind Farm and Associated Infrastructure.	Karoo Hoogland Local Municipality, Northern Cape & Laingsburg Local Municipality, Western Cape Provinces	Ecologist
2021	Ecological walkthrough for the proposed National Route 3 (N3) between Cato Ridge and Camperdown in KwaZulu-Natal.	Cato Ridge, KwaZulu-Natal	Ecologist
2021	Avifaunal Impact Assessment for the proposed Musina-Makhado Special Economic Zone South Site	Musina-Makhado, Limpopo	Avifaunal Specialist/Ornithologist
2021	Ecological Impact Assessment for the proposed prospecting on Farm In Die Kom 345 JQ	North West	Ecologist
2021	Rehabilitation Plan for Roggeveld Wind Energy Facility and associated Substation and 33kV and 132kV transmission powerlines.	Karoo Hoogland Local Municipality, Northern Cape & Laingsburg Local Municipality, Western Cape Provinces	Rehabilitation Specialist
2021	Rehabilitation Plan of the sewage effluent in Bethal.	Bethal, Mpumalanga	Rehabilitation Specialist
2021	Invasive Alien Plants Species Eradication and Control Program for Castle Gate Shopping Centre.	Pretoria, Gauteng	Ecologist
2020	Avifaunal Impact Assessment for the proposed 33kV overhead powerlines on Roggeveld Wind Energy Farm.	Karoo Hoogland Local Municipality, Northern Cape & Laingsburg Local Municipality, Western Cape Provinces	Avifaunal Specialist/Ornithologist
2020	Avifaunal & Ecological Impact Assessment for the proposed solar farm on Vaalkloof Nature Reserve.	Breede Valley Municipality, Western Cape	Ecologist
2020	Wetland assessment for the proposed water pipeline upgrade.	Daveyton, Gauteng	Ecologist

2020	Biodiversity Impact Assessment (BIA) for the proposed township establishment in Pretoria North.	Pretoria, Gauteng	Ecologist
2020	Freshwater impact assessment for the proposed water Kagiso Regional Park.	Kagiso, Gauteng	Ecologist
2019	Basic Assessment Report and EMPr for the proposed borehole drilling to supplement water supply for broiler in Delmas, Mpumalanga Province.	Delmas, Mpumalanga	Environmental Assessment Practitioner
2019	Wetland and Ecological Assessment for the proposed upgrading of bulk sewer pipeline in Amsterdam.	Amsterdam, Mkhondo Local Municipality	Ecologist
2019	Ecological assessment for the proposed mine on Farm Palmietfontein 189 IP situated within JB Marks Local Municipality, North West Province.	Ventersdorp, North West	Ecologist
2019	Biodiversity Management Plans for Evander Gold Mine.	Evander, Mpumalanga	Ecologist
2019	Avifaunal assessment for the proposed granite mine outside Mokopane.	Mogalakwena Local Municipality, Limpopo	Avifaunal Specialist/ Ornithologist
2019	Wetland assessment for the proposed grey water pipeline for irrigation.	Makhado Municipality, Limpopo	Ecologist
2019	Ecological assessment for the proposed for Nandoni mixed development.	Nandoni, Thulamela Local Municipality, Limpopo	Ecologist
2019	Ecological assessment for the proposed cultural village on farm Mphaphuli 278MT.	Mukomaasinandu, Thulamela Local Municipality, Limpopo	Ecologist
2019	Ecological assessment for the proposed Musina mixed development.	Musina, Limpopo	Ecologist
2019	Preliminary Ecological assessment for the prospecting on Kroomdrai farm, Mokopane.	Mokopane, Mogalakwena Local Municipality, Limpopo	Ecologist
2018	Invasive Alien Plants Species Eradication and Control Program Plan for Kwazenzele Ext. 1 Phase 2.	Lesedi Local Municipality, Gauteng province	Ecologist
2018	Updating of Wetland Assessment Report for the Magalies Lapatrie to Moruleng Pipeline.	Moses Kotana Local Municipality, North West province	Ecologist
2018	Avifaunal impact assessment for the proposed construction of two double storey on Mooifontein farm no 14IR, Portion 22 in Norkem, Kempton Park.	City of Ekurhuleni, Gauteng province	Avifaunal Specialist/ Ornithologist

2018	Ecological assessment for the proposed shopping centre and filling station in Madombidzha.	Madombidzha, Makhado Municipality, Limpopo province	Ecologist
2018	Biodiversity Assessment & Management Plan for Cullinan Diamond Mine.	Cullinan, Gauteng province	Ecologist (Faunal Specialist)
2017	Preconstruction Avifaunal Assessment for the Proposed Highlands Wind Energy Farm.	Somerset East, Eastern Cape province.	Ornithologist

DECLARATION BY THE LEAD SPECIALIST

I, Mokgatla Jerry Molepo , declare that:

• I act as the independent specialist in this application;

• I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

• I declare that there are no circumstances that may compromise my objectivity in performing such work;

• I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

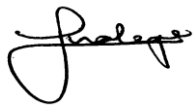
• I will comply with the Act, Regulations and all other applicable legislation;

• I have no, and will not engage in, conflicting interests in the undertaking of the activity;

• I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

• all the particulars furnished by me in this form are true and correct; and

• I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the Specialist

MORA Ecological Services (Pty) Ltd

Name of Company

07/11/2022

Date

INTRODUCTION

Proposed development

Greenmined Environmental (Pty) Ltd has been appointed by Raubex Construction (Pty) Ltd to undertake the required environmental impact assessment process for the proposed mining application on portion of the Farm Elands Spruit No 5523 in Alfred Duma Local Municipality within uThukela District Municipality in the KwaZulu-Natal Province.

As part of the application process, MORA Ecological Services (Pty) Ltd was appointed by Greenmined Environmental (Pty) Ltd to conduct a terrestrial biodiversity impact assessment of the proposed activities. Access to the farm can be gained turning from the N11 onto the Collings Pass Road driving from Ladysmith to Dundee.

The ecological diversity information from the desktop study and that was collected as part of our investigations will be used to inform the Government's review during the application process of the proposed development.

SITE DESCRIPTION OF AFFECTED ENVIRONMENT

The proposed mining permit site falls within the Alfred Duma Local Municipality within the uThukela District Municipality (Figure **1**). The site is currently being used as a livestock camp. There is also an old quarry which was not rehabilitated. Ecological surveys were conducted to evaluate potential impacts arising from the proposed mining activities.

Figure 1. Locality map of the proposed mining permit area.

Biome and bioregion

The geographic region of the proposed development falls on the Grassland Biome as shown in Figure **2** below. The Grassland Biome is found chiefly on the high central plateau of South Africa, and the inland areas of KwaZulu-Natal and the Eastern Cape. The topography is mainly flat and rolling but includes the escarpment itself. Altitude varies from near sea level to 2 850 m above sea level.

Grasslands (also known locally as Grassveld) are dominated by a single layer of grasses. The amount of cover depends on rainfall and the degree of grazing. Trees are absent, except in a few localized habitats. Geophytes (bulbs) are often abundant. Frosts, fire and grazing maintain the grass dominance and prevent the establishment of trees. There are two categories of grass plants: sweet grasses have a lower fibre content, maintain their nutrients in the leaves in winter and are therefore palatable to stock. Sour grasses have a higher fibre content and tend to withdraw their nutrients from the leaves during winter so that they are unpalatable to stock. At higher rainfall and on more acidic soils, sour grasses prevail, with 625 mm per year taken as the level at which unpalatable grasses predominate. C4 grasses dominate throughout the biome, except at the highest altitudes where C3 grasses become prominent. Grass plants tolerate grazing,

fire, and even mowing, well: most produce new stems readily, using a wide variety of strategies. Overgrazing tends to increase the proportion of pioneer, creeping and annual grasses, and it is in the transition zones between sweet and sour grass dominance that careful management is required to maintain the abundance of sweet grasses. The Grassland Biome is the mainstay of dairy, beef and wool production in South Africa. Pastures may be augmented in wetter areas by the addition of legumes and sweet grasses. The Grassland Biome is the cornerstone of the maize crop, and many grassland types have been converted to this crop. Sorghum, wheat and sunflowers are also farmed on a smaller scale (Low & Rebelo, 1996).

The vegetation type found within the study site is Northern KwaZulu-Natal Moist Grassland (Figure **3**), and it is described below.

Northern KwaZulu-Natal Moist Grassland Distribution

This vegetation type is predominantly found in the northern and north-western regions of the KwaZulu-Natal Province, where it forms a discontinuous rim around the upper Thukela Basin and is situated almost entirely within the catchment of the Thukela River. The most extensive areas are in the vicinity of Winterton, Bergville, Fort Mistake, Dannhauser, Dundee, north of Ladysmith and west of Newcastle. Present at altitudes between 1 040–1 440 m.

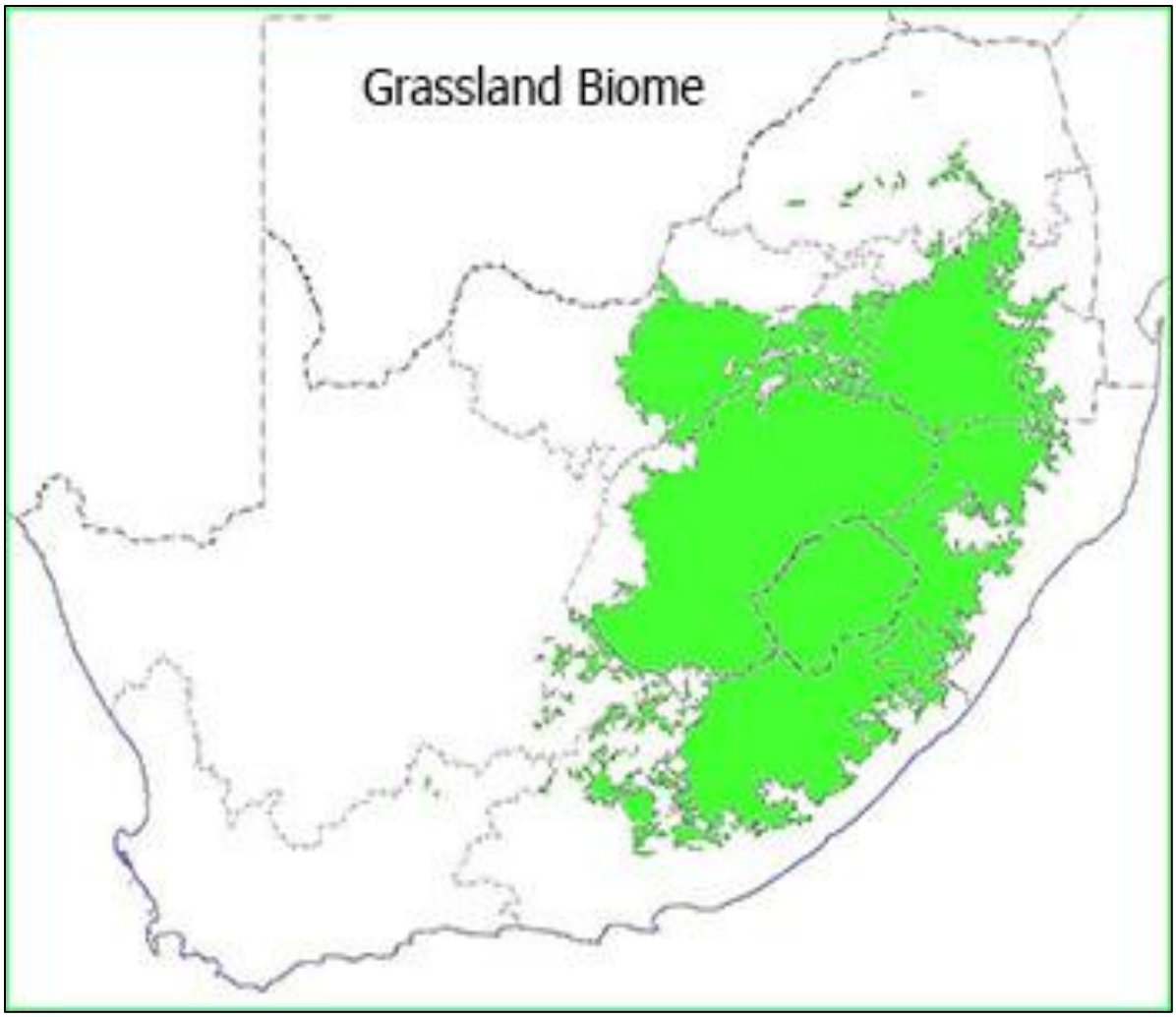


Figure 2. Location map of the Savanna Biome within South Africa (Low & Rebelo, 1996)

Vegetation

The dominant vegetation type found on the study site is Northern KwaZulu-Natal Moist Grassland (Figure **3**). According to the 2011 Threatened Ecosystems, no portion of the site is located within any Threatened Ecosystem (Figure **4**). However, in the Draft Revised List of Threatened Terrestrial Ecosystems – 2021 (DFFE Gazette No. 45426), the Northern KwaZulu-Natal Moist Grassland is listed as Vulnerable. According to SANBI's Critical Biodiversity Areas, a portion of the site located on the west, falls within KZN CBA: Optimal.

Figure 3. Vegetation map relative to the proposed mining permit area.

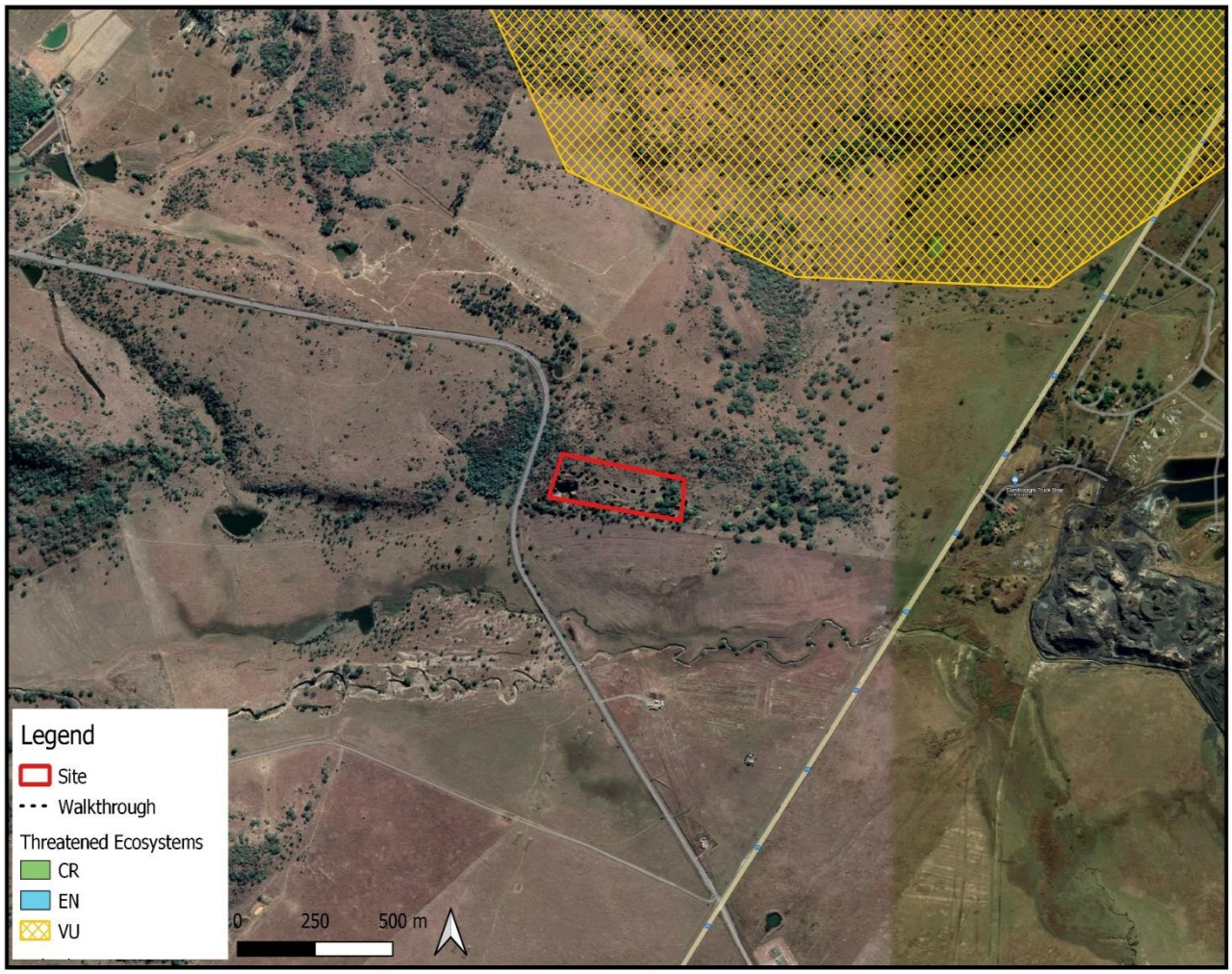


Figure 4. 2011 Threatened Ecosystems map around the proposed mining permit area.

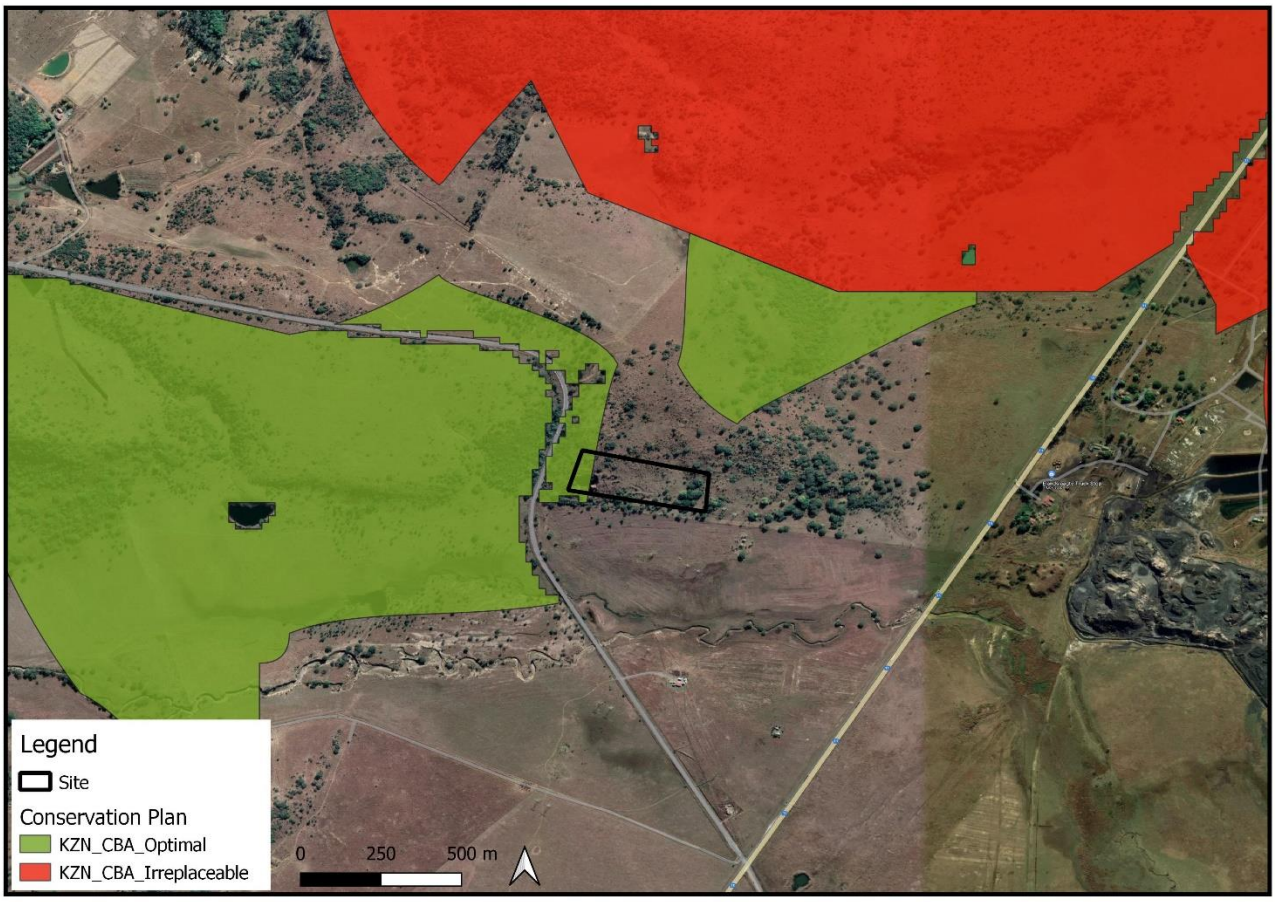


Figure 5. Critical Biodiversity Areas map around the proposed mining permit area.

Climate

The area is influenced by the local steppe climate. There is high precipitation between October and March. Elands Spruit has a summer rainfall, with overall mean annual precipitation of 840 mm (710–1 120 mm; Camp 1999a), mainly as summer thunderstorms. Mist occurs frequently on hilltops in spring and early summer, but summer droughts are also frequent. Summers are warm to hot, with maximum temperature recorded in the hottest month of January (Mean Annual Temperature of 27.8°C). Mean Annual Temperature is around 16°C, but some surrounding localities may reach 17°C. Frosts are severe and occur about 20 days per year. Mean annual evaporation recorded at is approximately 1 895 mm (Figure **6**).

According to Köppen -Geiger system (Kottek *et al*. 2006), the study site falls within the CWb climatic region.

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	21.6 °C (70.8) °F	21.5 °C (70.7) °F	20.2 °C (68.4) °F	17.3 °C (63.1) °F	14.2 °C (57.5) °F	11.1 °C (52.1) °F	10.8 °C (51.5) °F	13.8 °C (56.8) °F	17 °C (62.5) °F	18.6 °C (65.5) °F	19.8 °C (67.7) °F	21.2 °C (70.1) °F
Min. Temperature °C (°F)	16.3 °C (61.3) °F	16.4 °C (61.5) °F	14.8 °C (58.6) °F	11.5 °C (52.8) °F	7.3 °C (45.1) °F	3.9 °C (39.1) °F	3.3 °C (37.9) °F	6.2 °C (43.1) °F	9.4 °C (48.9) °F	11.9 °C (53.3) °F	13.7 °C (56.6) °F	15.4 °C (59.8) °F
Max. Temperature °C (°F)	27.7 °C (81.9) °F	27.5 °C (81.6) °F	26.4 °C (79.6) °F	23.7 °C (74.7) °F	21.7 °C (71) °F	19.2 °C (66.6) °F	19.1 °C (66.5) °F	22.2 °C (72) °F	25.3 °C (77.6) °F	26.2 °C (79.2) °F	27 °C (80.7) °F	27.9 °C (82.1) °F
Precipitation / Rainfall mm (in)	176 (6)	146 (5)	122 (4)	58 (2)	23 (0)	15 (0)	18 (0)	31 (1)	41 (1)	105 (4)	140 (5)	182 (7)
Humidity(%)	67%	67%	65%	62%	55%	52%	49%	46%	46%	55%	60%	64%
Rainy days (d)	13	11	10	6	3	2	2	3	5	11	12	14
avg. Sun hours (hours)	8.4	8.6	8.3	8.0	8.5	8.3	8.5	8.7	8.6	8.2	8.5	8.8

Data: 1991 - 2021 Min. Temperature °C (°F), Max. Temperature °C (°F), Precipitation / Rainfall mm (in), Humidity, Rainy days. Data: 1999 - 2019: avg. Sun hours

Figure 6. Climatic diagram representative of the region.

Site Sensitivity Assessment

The DFFE screening tool was consulted for the proposed area of the mining permit. The DFFE screening tool outputs (Figure 7, 8 & 9) highlighted the site as having Medium plant sensitivity, High animal sensitivity and Very High terrestrial biodiversity sensitivity. However, on site assessment revealed that the High animal and Medium Plant sensitivity were not accurate due to the extent of habitat disturbance, which include quarry, alien invasion, and livestock grazing. Although the site was visited in August and November, no potential habitats for the sensitive rock nesting avian species were observed or nesting areas for the large grassland avian species. None of the sensitive plant species were observed.

Table 1. Site sensitivity ratings to species data in the screening tool

Sensitivity Rating	Description of Sensitivity Rating
Very high	Habitat for species that are endemic to South Africa, where all the known occurrences of that species are within an area of 10 km^2 is considered critical habitat, as all remaining habitat is irreplaceable. Typically, these include species that qualify under the CR, EN, or VU criteria of the IUCN or species listed as Critically/Extremely Rare under South Africa's National Red List Criteria. For each species reliant on a critical habitat, all remaining suitable habitat has been manually mapped at a fine scale.
High	Recent occurrence records for all threatened (CR, EN, VU) and/or Rare endemic species are included in the high sensitivity level. Spatial polygons of suitable habitat have been produced for each species by intersecting recently collected occurrence records (those collected since the year 2002) that have a spatial confidence level of less than 250 m with segments of remaining natural habitat. For birds, species distribution models (SDMs) and SABAP2 data (http://sabap2.birdmap.africa/) were combined to delineate the 'high' sensitivity areas
Medium	Medium Model-derived suitable habitat areas for threatened and/or rare species are included in the medium sensitivity level. Two types of spatial models have been included. The first is a simple rule-based habitat suitability model where habitat attributes such as vegetation type and altitude are selected for all areas where a species has been recorded to occur. The second is a species distribution model which uses species occurrence records combined with multiple environmental variables to quantify and predict areas of suitable habitat. The models provide a probability-based distribution indicating a continuous range of habitat suitability across areas that have not been previously surveyed. A probability threshold of 75% for suitable habitat has been used to convert the modelled probability surface and reduce it into a single spatial area which defines areas that fall within the medium sensitivity level.
Low	Low Areas where no species of conservation concern (SCC) are known or expected to occur.

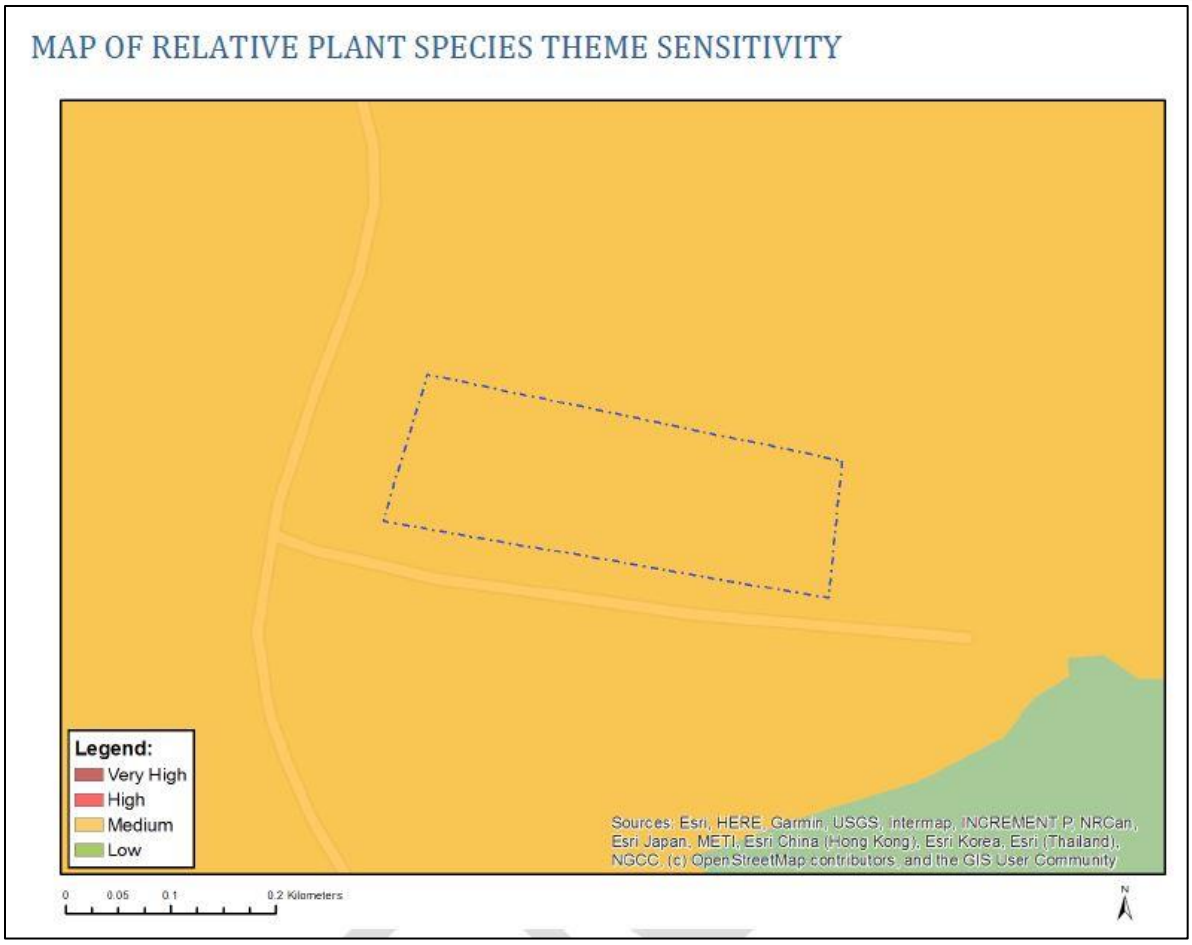


Figure 7. DFFE screening tool outputs for relative plant species sensitivity for the proposed mining permit application.

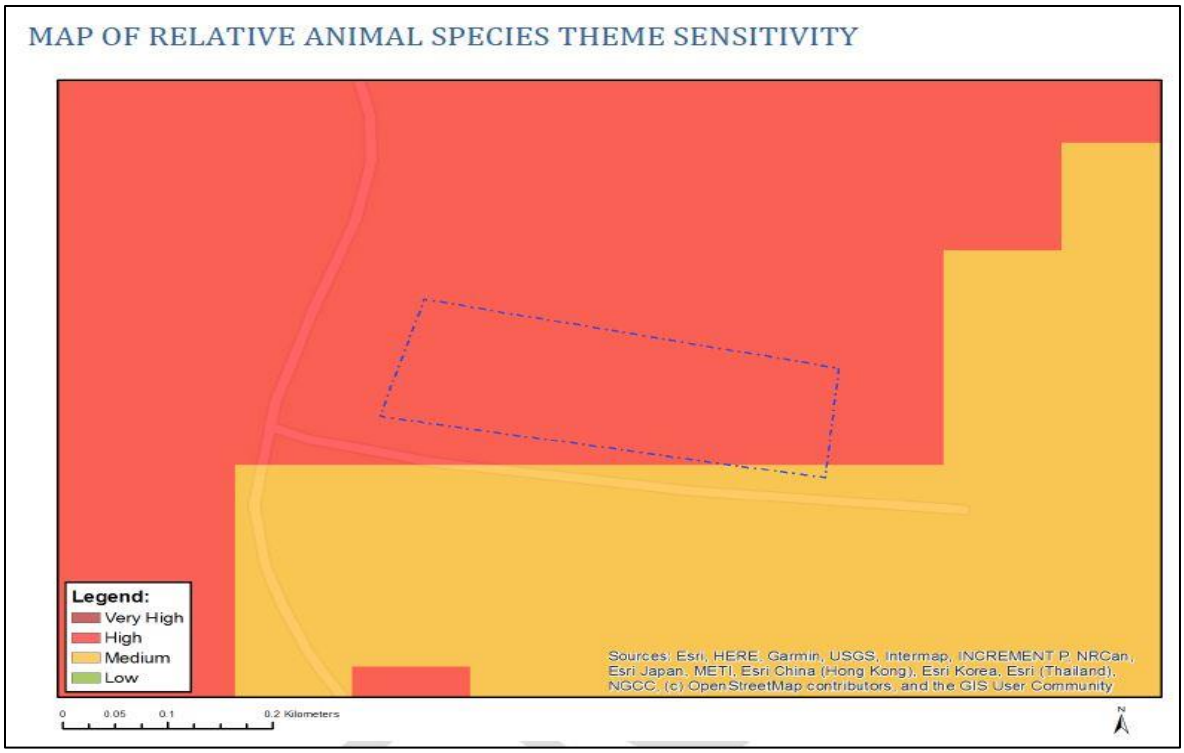


Figure 8. DFFE screening tool outputs for relative animal species sensitivity for the proposed mining permit application.

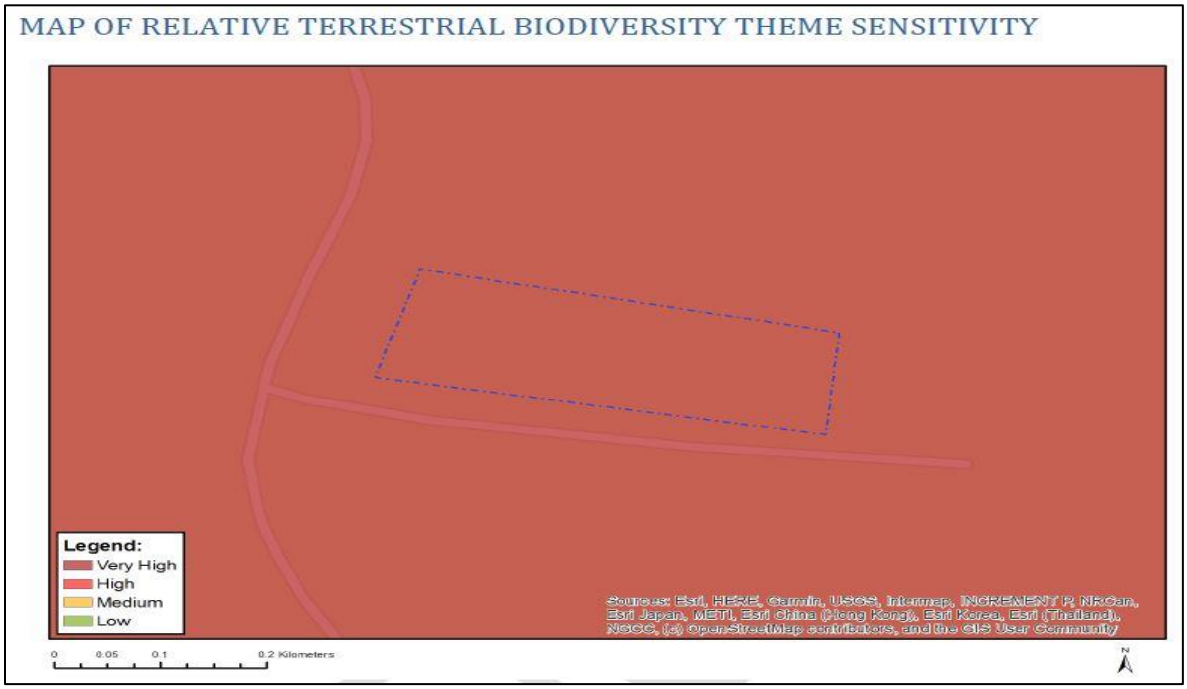


Figure 9. DFFE screening tool outputs for relative terrestrial biodiversity sensitivity for the proposed mining permit application.

LEGAL FRAMEWORK RELATING TO FLORA SPECIES AND PROPOSED DEVELOPMENT

International law and conventions

The importance of sustainable development and the protection of environmental resources have globally become a driving factor in the construction of new legislation governing industrial practices and their impact on the environment. South Africa has signed and ratified a number of global treaties, protocols and conventions, agreeing to implement the policies, which endorse sustainable development and promote a positive environmental legacy for future generations. A considerable international convention to which South Africa is in agreement with in signatory is namely the Convention on Biological Diversity (CBD). The CBD is notably the key international convention for sustainable development. The CBD has three main objectives which lead and encourage a sustainable future. These are:

- The conservation of biological diversity;
- The sustainable use of its components; and
- The fair and equitable sharing of the benefits from the use of genetic resources.

The convention covers all possible domains that are directly or indirectly related to biodiversity and its role in development, ranging from science, politics and education to agriculture, business and culture.

South African Constitution

The foundation of South Africans Environmental law is set in the Constitution of the Republic of South Africa (1996), specifically “Chapter 2- The Bill of Rights: section 24”. This has allowed for the rapid development of environmentally based legislations which guard, enforce and guide all parties to maintain the human rights granted in the Constitution. These rights include:

- The right to an environment that is not harmful to their health or well-being; and
- To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

National Environmental Management Act (NEMA)

The National Environmental Management Act (NEMA), Act 107 of 1998 is the fundamental environmental legislation which aims to strengthen the rights granted in the South African Constitution. The NEMA Act is the foundation of environmental law in South Africa and has set the framework for additional legislation to build on. The Act establishes principles for decision-making on environmental matters, as well as providing motive for institutions which promote cooperative governance, and which can coordinate environmental action plans. Section 2(4) specifies that sustainable development requires the consideration of all relevant factors. In the regard to biodiversity and South Africa’s ecological integrity, development should not result

in the disturbance of ecosystems and loss of biological diversity, if not possible, these effects must be minimised and remedied. A low-risk, cautious approach should always be applied, considering limits of current knowledge concerning consequences and actions. Always anticipate possible negative impacts on the environment and people's environmental rights, identified impacts should be prevented and where they cannot be altogether prevented, are minimised and mitigated. Outlined NEMA principles with regard to biodiversity are to:

- Prevent pollution and ecological degradation
- Promote conservation; and
- Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

National Environmental Management of Biodiversity Act (NEMBA)

The National Environmental Management of Biodiversity Act (NEMBA) Act 10 of 2004 was designed to provide a management and conservation outline for biological diversity, as drafted under the NEMA. NEMBA focuses on the management and conservation of biodiversity, with its relevant components, which includes the use of indigenous biological resources in a sustainable manner, the fair and equitable sharing of benefits arising from bio-prospecting, cooperative governance in biodiversity management and conservation within the structures of NEMA. The Act, in protecting biodiversity, deals with the protection of threatened ecosystems and species, the control of alien invasive species, genetically modified organisms and regulates bio-prospecting. As with NEMA, NEMBA incorporates and gives effect to international agreements relating to biodiversity. The Act gives the Minister of Environmental Affairs, Forestry and Fisheries the power to categorise any process or activity in a listed ecosystem, as a threatening process, thereafter, be regarded as an activity contemplated in Section 24(2) (b) of NEMA which states that: Specified activities may not be commenced without prior authorisation from the Minister or MEC and specify such activities. NEMBA is the most prominent statute containing provisions directly aimed at the conservation of b with the Threatened or Protected Species Regulations, February 2007 (TOPS Regulations). The NEMBA Regulations on Threatened or Protected Species (TOPS, 2007) lists all of the species that are threatened with extinction and therefore, nationally protected under an approach to sustainable use and development. Periodically, Red Data books are published, and the data used to update these lists of protected species.

Additionally, NEMBA regulates all invasive organisms in South Africa, including a wide range of fauna and flora. Chapter 5 of the Act relates to species and organisms posing a potential threat to biodiversity. The purpose of Chapter 5 is:

- To prevent the unauthorized introduction and spread of alien species and invasive species to ecosystems and habitats where they do not naturally occur;

- To manage and control alien species and invasive species to prevent or minimize harm to the environment and to biodiversity in particular;
- To eradicate alien species and invasive species from ecosystems and habitats where they may harm such ecosystems or habitats;

According to Section 65 of the Act, "Restricted activities involving alien species":

- A person may not carry out a restricted activity involving a specimen of an alien species without a permit issued in terms of Chapter 7.

Restricted activities include the following:

- Importing into the Republic, including introducing from the sea, any specimen of a listed invasive species.
- Having in possession or exercising physical control over any specimen of a listed invasive species.
- Growing, breeding or in any other way propagating any specimen of a listed invasive species, or causing it to multiply.
- Conveying, moving, or otherwise translocating any specimen of a listed invasive species.
- Selling or otherwise trading in, buying, receiving, giving, donating, or accepting as a gift, or in any other way acquiring or disposing of any specimen of a listed invasive species.
- Spreading or allowing the spread of any specimen of a listed invasive species.
- Releasing any specimen of a listed invasive species.

Conservation of Agricultural Resources Act (Act No. 43 of 1983)

In terms of the amendments to the regulations under this Act, landowners are legally responsible for the control of invasive alien plants on their properties. The schedules provide a list of declared weeds and invaders, which have been divided into three categories, as follows:

- Category 1 plants are prohibited and must be controlled.
- Category 2 plants (commercially used plants) may be grown in demarcated areas providing that there is a permit and that steps are taken to prevent their spread.
- Category 3 plants (ornamentally used plants) may no longer be planted; existing plants may remain, as long as all reasonable steps are taken to prevent the spreading there of, except within the flood line of watercourses and wetlands.

METHODS

Methodology

Prior to conducting field assessments, a comprehensive literature review of available published and unpublished literature pertaining to the current use of the land and the potential environmental sensitivity of the site. Part of desktop included the retrieval of previously recorded plants in the area. This data was obtained from BRAHMS Online (SANBI). The species are listed under appendix C.

The main objective of the flora assessment was to include every plant species with the slightest chance of occurring within the site in the species list. The following tasks were undertaken by MORA Ecological Services (Pty) Ltd to achieve the assessment objective:

Flora

- A visual inspection of the study area was done before surveys were conducted.
- During the process different homogenous vegetation units were identified and subsequently surveyed on foot and by vehicle in order to determine the floristic composition of each unit.
- A plotless sampling method was used to record data.
- Species identification was done following reputable checklists and field guides.
- Where necessary, plant material was collected and/or photographs taken of specimens for identification purposes.

Fauna

- Prior to the initial visit, satellite images (Google Earth) of the site were studied and the different habitat types identified (uniform features from an aerial perspective). The sites were then ground-truthed upon arrival.
- Non-invasive walk transects were performed during the site assessment, documenting all animal sightings.
- Avifaunal surveys were conducted by means of walk transects and point count method. A 12 minutes point count method on a 20 m radius was used (Macchi & Grau 2012).
- No formal consultation process was conducted as part of this faunal study as it was not deemed necessary at the time of the study.

The site visit was initially conducted on the 03rd to 04th August 2022 which was not during optimal season especially for most plants. The second site visit was conducted from 04th to 05th November to conduct necessary in-field procedures in assessing the vegetation and faunal composition and within the study area. The surveys were conducted by two senior fieldworkers. Surveys were conducted from early morning when animal activity is optimal, and it involved recording species encountered within the identified site.

RESULTS OF THE ECOLOGICAL ASSESSMENT

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.

The site was found to be of Low Ecological Function due to the habitat fragmentation caused by the existing Collings Pass Road to Matiwane Village. The road acts as a barrier for migration by faunal species due to road kills. Although the western portion of the site falls within KZN CBA: Optimal, approximately 40% of the CBA within the site has been destroyed by the existing quarry. Furthermore, the CBA has been cut from the rest (Figure **5**) by the Collings Pass Road. Roads that act as barriers that prevent movement of mammals and reptiles (Naicker et al. 2016). Furthermore, these kinds of barriers often reduce gene flow and diversity within plant populations (Browne & Karubian, 2018).

The study site lies on a rocky vegetation comprising of low to tall trees with grassland on open areas. See figure 10 & 11). The higher elevations are characterised by the provincially protected *Aloe marlothii* and this has resulted in the area being categorised as Medium Sensitive area (Figure **12**). The Aloes are specially protected under the Natal Nature Conservation Ordinance (NNCO; Act No. 15 of 1974), and as a result, they require permits before any form of disturbance.

In terms of fauna, only Rock Hyrax were observed during the surveys. No sensitive faunal species were observed during the survey.

Species recorded in the proposed development area are represented in Appendix B. All of the recorded species are not Red Data listed as they are mostly widespread species. There are no objections from an ecological perspective for the application due to the fact that the targeted area has been disturbed. The CBA falls on the highly disturbed site. However, it is highly recommended that the Aloes be relocated outside the application footprint.

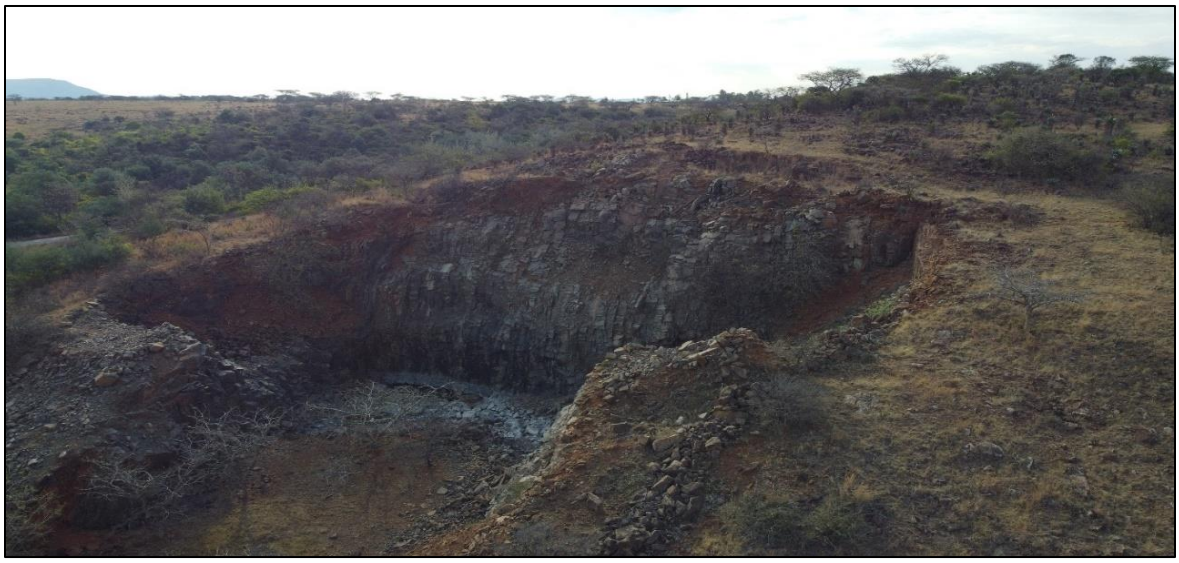


Figure 10. Photographic representation of the transformed habitat.

Figure 11. Photographic representation of the untransformed habitat.

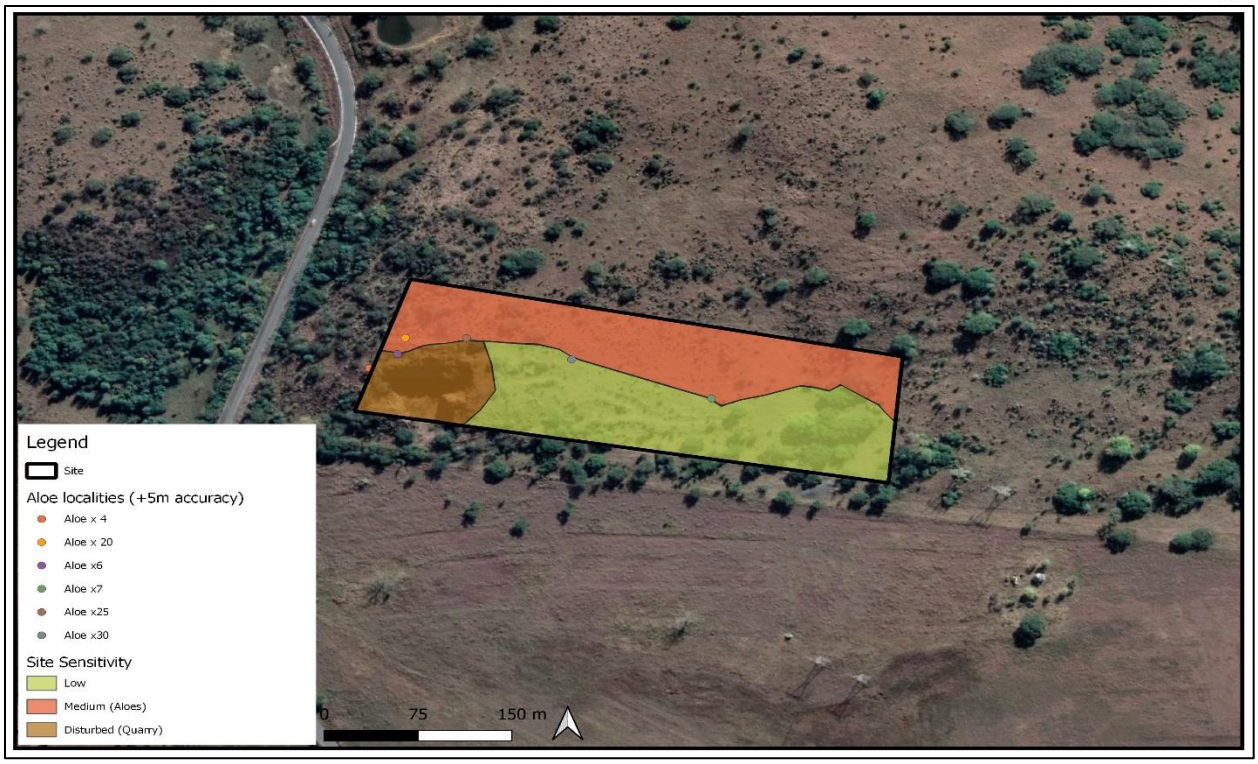


Figure 12. Site sensitivity of the site.

Rock Hyrax

Syringa

Mountain Aloe

Bugweed

Figure 13. Overview of the site.

Alien and Invasive flora species

Invasive alien species are establishing and expanding in growing number world, and in many parts of the invasions are often followed by major negative effects on ecosystems, the environment, and human health. Alien and invasive species were encountered on site, the species is listed and Table 2 below gives a detailed description of the species.

Table 2. Listed invasive alien plants observed on site.

Species	Common Name	Growth Form	Category (NEMBA)
Lantana camara	Lantana	Shrub	(Declared Category 1b)
Melia azedarach	Syringa	Tree	(Declared Category 1b)
Solanum mauritianum	Bugweed	Shrub	(Declared Category 1b)

IMPACT ASSESSMENT RATINGS AND MITIGATION REQUIREMENTS

The methodology is included as Appendix A: Method of Environmental Assessment at the end of this report. The rating rankings for assessing impacts significance are as shown in Table 3 below. The findings of the impact assessment ratings are shown in the tables below. Table 4 is the impacts matrix used for scoring environmental significance and

Table **5** is a summary of impacts ratings for the proposed development using Appendix A.

Table 3. Impact rating scoring used for the impact assessment of the proposed mining permit application.

Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive very high impact	The anticipated impact will have highly significant positive effects.

An impact assessment of all potential pre-construction, construction, operational and maintenance phase impacts associated with the activities pertaining to the proposed mining permit application are provided in Table **4**.

Table 4. Impact rating scoring used for the flora impact assessment at the proposed mining permit application.

Site Establishment (Construction Phase)	**Preferred Alternative (Alternative 1)**	
	Before Mitigation	**After Mitigation**
POTENTIAL IMPACTS ASPECTS		
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Vehicle movement and compaction of soil minimising plant growth of indigenous flora	Vehicles should only use designated roadways to access the site

Magnitude:	3	2
Duration:	2	1
Geographical Extent:	1	1
Loss of Resources:	3	2
Reversibility:	3	2
Cumulative Effect:	2	1
Probability:	3	1
Total SP:	42	16
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Alteration of natural environment and habitat loss	Have a biodiversity protocol and rehabilitation plan in place that will be implemented upon closure.
Magnitude:	3	2
Duration:	2	1
Geographical Extent:	1	1
Loss of Resources:	2	2
Reversibility:	2	1
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	36	16
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Spreading of invasive alien plants. The altered environment will also favour species that are better adapted to disturbed/transformed areas.	Invasive plant material should be disposed by incineration, or alternatively, composting to break down seeds. If seedbank persists, invasive alien plant management and eradication measures should be implemented
Magnitude:	3	2
Duration:	3	2
Geographical Extent:	1	1
Loss of Resources:	3	2
Reversibility:	3	2
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	45	20
Significance rating:	Negative medium impact	Negative low impact
Operation Phase	**Preferred Alternative (Alternative 1)**	
	Before Mitigation	**After Mitigation**
POTENTIAL IMPACTS ASPECTS		

POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Vehicle movement and compaction of soil minimising plant growth of indigenous flora	Vehicles should only use designated roadways to access the site
Magnitude:	3	2
Duration:	3	2
Geographical Extent:	1	1
Loss of Resources:	3	2
Reversibility:	3	2
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	45	20
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Alteration of natural environment and loss of habitat	The ecological footprint of the proposed development should be restricted to the approved area. Areas outside the area of the proposed development should not be cleared. Search and Rescue should be implemented.
Magnitude:	3	2
Duration:	2	1
Geographical Extent:	1	1
Loss of Resources:	2	2
Reversibility:	2	1
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	36	16
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Spreading of invasive alien plants. The altered environment will also favour species that are better adapted to disturbed/transformed areas.	Invasive plant material should be disposed by incineration, or alternatively, composting to break down seeds. If seedbank persists, invasive alien plant management and eradication measures should be implemented
Magnitude:	3	2
Duration:	3	2
Geographical Extent:	1	1
Loss of Resources:	2	2
Reversibility:	3	2
Probability:	3	2

Total SP:	36	18
Significance rating:	Negative medium impact	Negative low impact
Decommissioning Phase	**Preferred Alternative (Alternative 1)**	
	Before Mitigation	**After Mitigation**
POTENTIAL IMPACTS ASPECTS		
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Continuous proliferation of invasive alien plants	Effective alien invasive plant management and eradication measures should be implemented on an ongoing basis
Magnitude:	3	2
Duration:	3	2
Geographical Extent:	1	1
Loss of Resources:	3	2
Reversibility:	3	2
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	45	20
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Exposed disturbed area with no indigenous vegetation	Implement effective rehabilitation measures upon closure. Use indigenous species only.
Magnitude:	3	2
Duration:	2	1
Geographical Extent:	1	1
Loss of Resources:	2	2
Reversibility:	2	1
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	36	16
Significance rating:	Negative medium impact	Negative low impact
Post Decommissioning Phase	**Preferred Alternative (Alternative 1)**	
	Before Mitigation	**After Mitigation**
POTENTIAL IMPACTS ASPECTS		

POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Continuous proliferation of invasive alien plants	Effective alien invasive plant management and eradication measures should be implemented on an ongoing basis
Magnitude:	3	2
Duration:	3	2
Geographical Extent:	1	1
Loss of Resources:	3	2
Reversibility:	3	2
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	45	20
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Exposed disturbed area with no indigenous vegetation	Implement effective rehabilitation measures upon closure
Magnitude:	3	2
Duration:	2	1
Geographical Extent:	1	1
Loss of Resources:	2	2
Reversibility:	2	1
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	36	16
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Long-term or permanent degradation and modification of the receiving environment resulting to the loss of important habitats	Minimise development footprint and habitat transformation, rehabilitate with indigenous flora and reserve indigenous vegetation throughout as far as possible
Magnitude:	3	2
Duration:	3	2
Geographical Extent:	1	1

Loss of Resources:	3	2
Reversibility:	3	2
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	45	20
Significance rating:	Negative medium impact	Negative low impact

Table 5. Summary of flora impact ratings for the proposed mining permit application.

	Average impact rating	Significance class	Average mitigated impact	Significance class
Potential impact on the current vegetation structure before and after mitigation	40.64	Negative medium impact	18.00	Negative low impact

Table 6. Animal species composition impact ratings for the proposed mining permit application.

Construction Phase/Site Establishment	**Preferred Alternative (Alternative 1)**	
	Before Mitigation	**After Mitigation**
POTENTIAL IMPACTS ASPECTS		
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Loss of priority fauna species from important habitats	Reserve indigenous vegetation wherever possible. Avoid vegetation clearance during the breeding season.
Magnitude:	3	2
Duration:	2	1
Geographical Extent:	1	1
Loss of Resources:	3	2
Reversibility:	3	2
Cumulative Effect:	2	1
Probability:	3	1
Total SP:	42	16
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Loss of resident fauna through increased disturbance	Reserve indigenous vegetation wherever possible. Avoid vegetation clearance during the breeding season.
Magnitude:	3	2
Duration:	2	1
Geographical Extent:	1	1
Loss of Resources:	2	2
Reversibility:	2	1

Cumulative Effect:	2	1
Probability:	3	2
Total SP:	36	16
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Long-term or permanent degradation and modification of the receiving environment resulting to the loss of important habitats	Use designated roads to access the site. Rehabilitate unused areas with indigenous flora
Magnitude:	3	2
Duration:	3	2
Geographical Extent:	1	1
Loss of Resources:	3	2
Reversibility:	3	2
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	45	20
Significance rating:	Negative medium impact	Negative low impact
Operation Phase	**Preferred Alternative (Alternative 1)**	
	Before Mitigation	**After Mitigation**
POTENTIAL IMPACTS ASPECTS		
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Long-term or permanent degradation and modification of the receiving environment resulting to the loss of important habitats for fauna species	Reserve indigenous vegetation wherever possible.
Magnitude:	3	2
Duration:	3	2
Geographical Extent:	1	1
Loss of Resources:	3	2
Reversibility:	3	2

Cumulative Effect:	2	1
Probability:	3	2
Total SP:	45	20
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Loss of resident fauna through increased disturbance	Reserve indigenous vegetation wherever possible. Avoid vegetation clearance during the breeding season. No hunting of fauna is allowed.
Magnitude:	3	2
Duration:	2	1
Geographical Extent:	1	1
Loss of Resources:	2	2
Reversibility:	2	1
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	36	16
Significance rating:	Negative medium impact	Negative low impact
Decommissioning Phase	**Preferred Alternative (Alternative 1)**	
	Before Mitigation	**After Mitigation**
POTENTIAL IMPACTS ASPECTS		
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Long-term or permanent degradation and modification of the receiving environment resulting to the loss of important avian habitats	Have a biodiversity protocol and rehabilitation plan that will be implemented following the decommissioning phase
Magnitude:	3	2
Duration:	3	2
Geographical Extent:	1	1
Loss of Resources:	3	2
Reversibility:	3	2
Cumulative Effect:	2	1
Probability:	3	2

Total SP:	45	20
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Displacement of resident fauna species through increased disturbance	Have a biodiversity protocol and rehabilitation plan that will be implemented following the decommissioning phase
Magnitude:	3	2
Duration:	2	1
Geographical Extent:	1	1
Loss of Resources:	2	2
Reversibility:	2	1
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	36	16
Significance rating:	Negative medium impact	Negative low impact
Post Decommissioning Phase	**Preferred Alternative (Alternative 1)**	
	Before Mitigation	**After Mitigation**
POTENTIAL IMPACTS ASPECTS		
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Long-term or permanent degradation and modification of the receiving environment resulting to the loss of important habitats for all animal groups	Minimise development footprint and habitat transformation, limit ongoing human activity to the minimum required for ongoing operation, control noise to minimum, rehabilitate with native vegetation and retain indigenous vegetation throughout as far as possible, limit roadways and vehicle speeds; rehabilitate thoroughly post-decommissioning with locally native species
Magnitude:	3	2

Duration:	3	2
Geographical Extent:	1	1
Loss of Resources:	3	2
Reversibility:	3	2
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	45	20
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Cumulative displacement of resident fauna species	Minimise development footprint and habitat transformation, limit ongoing human activity to the minimum required for ongoing operation, control noise pollution, rehabilitate with indigenous flora and reserve indigenous vegetation throughout as far as possible, limit roadways and vehicle speeds
Magnitude:	3	2
Duration:	2	1
Geographical Extent:	1	1
Loss of Resources:	2	2
Reversibility:	2	1
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	36	16
Significance rating:	Negative medium impact	Negative low impact
POTENTIAL ENVIRONMENTAL IMPACT / NATURE OF IMPACT:	Long-term or permanent degradation and modification of the receiving environment resulting to the loss of	Minimise development footprint and habitat transformation, rehabilitate with indigenous flora and

	important habitats for fauna species	reserve indigenous vegetation throughout as far as possible
Magnitude:	3	2
Duration:	3	2
Geographical Extent:	1	1
Loss of Resources:	3	2
Reversibility:	3	2
Cumulative Effect:	2	1
Probability:	3	2
Total SP:	45	20

Table 7. Summary of the fauna species impact ratings for the proposed mining permit application.

	Average impact rating	**Significance class**	**Average mitigated impact**	**Significance class**
Overall faunal impacts of the mining permit application	42.92	Negative medium impact	20.50	Negative low impact

NO-GO AREAS, BUFFERS AND ALTERNATIVES

No no-go areas are applicable to the project site from an ecological perspective. Should the proposed activity not proceed, due to other specialist studies, the site will remain unchanged.

No other possible sites were identified on the affected property(ies) for the mining permit. This site is referred to as the preferred site. Some limited sensitive features occur on the site such as the presence of Aloes. The size of the farm makes provision for the relocation of any sensitive plants to non-targeted areas.

SPECIALIST OPINION AND RECOMMENDATIONS

Although the DFFE screening tool report classifies the site as having high faunal and medium floral sensitivity, the on site assessment revealed that the site is of low animal sensitivity and medium plant sensitivity due to occurrence of Aloes along the northern part of the site.

Important recommendations for the conservation of the current vegetation structure

- The proponent must be committed to a conservation approach of practice and the actual footprint of disturbance must be kept to a minimum.

- Relocation of important species, identification and demarcation of specimens and sub habitats not to be disturbed will have to be done beforehand by a specialist.
- Important species (flora) that will be threatened by the development must be relocated to safer habitats by suitable specialists.
- Preventative erosion control measures to be put in place.
- Conduct alien invasive species monitoring on an annual basis.
- Botanical walkthrough should be conducted prior to site establishment, in order to confirm the presence or absence of any Red Data species that may have been missed during this current study.

Important recommendations for the invasive alien plants

The identified alien plants should be eradicated during operational phase. An alien management plan should be compiled for the site. The applicant can implement the alien management plan with the guide of an Ecologist.

Specific conditions recommended for the EA from a flora and fauna perspective

1. Implement mitigation controls during the site establishment phase as specified in the mitigation requirements. Monitor and report on their effectiveness.
2. Implement mitigation controls during the operational phase as specified in the mitigation. Monitor and report on their effectiveness.
3. Monitoring of implementation of mitigation controls, especially of invasive alien plants.
4. Effective restoration of the natural habitats that were intact before the mining activities should be implemented and reported on after decommissioning.

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APPENDICES

Appendix A: Method of Environmental Assessment

1.1 METHOD OF ENVIRONMENTAL ASSESSMENT

The environmental assessment aims to identify the various possible environmental impacts that could results from the proposed activity. Different impacts need to be evaluated in terms of its significance and in doing so highlight the most critical issues to be addressed.

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale i.e., site, local, national or global whereas intensity is defined by the severity of the impact e.g., the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in Table 3.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

1.1.1 Impact Rating System

Impact assessment must take account of the nature, scale and duration of impacts on the environment whether such impacts are positive or negative. Each impact is also assessed according to the project phases:

- planning
- construction
- operation
- decommissioning

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance should also be included. The rating system is applied to the potential impacts on the receiving environment and includes an objective evaluation of the mitigation of the impact. In assessing the significance of each impact, the following criteria is used:

Table 7. The rating system

NATURE
Include a brief description of the impact of the environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted by a particular action or activity.
GEOGRAPHICAL EXTENT

This is defined as the area over which the impact will be experienced.		
1	Site	The impact will only affect the site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact.		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
DURATION		
This describes the duration of the impacts. Duration indicates the lifetime of the impact as a result of the proposed activity.		
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 30 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur

		in such a way or such a time span that the impact can be considered indefinite.
INTENSITY/ MAGNITUDE		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/ component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
REVERSIBILITY		
This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible, and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		

This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
CUMULATIVE EFFECT		
This describes the cumulative effect of the impacts. A cumulative impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.		
1	Negligible cumulative impact	The impact would result in negligible to no cumulative effects.
2	Low cumulative impact	The impact would result in insignificant cumulative effects.
3	Medium cumulative impact	The impact would result in minor cumulative effects.
4	High cumulative impact	The impact would result in significant cumulative effects
SIGNIFICANCE		
Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The calculation of the significance of an impact uses the following formula: (Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity. The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.		
Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.

51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive very high impact	The anticipated impact will have highly significant positive effects.

Appendix B: Species list of species identified on site

1. Plant species

Species	Common Name	Growth Form	IUCN Conservation Status
Vachellia sieberiana	Paperbark Thorn Tree	Tree	Least Concern
Vachellia karoo	Sweet Thorn Tree	Tree	Least Concern
Aloe marlothii	Mountain Aloe	Succulent	Least Concern
Cussonia paniculata	Mountain Cabbage tree	Tree	LC
Aristida congesta subsp. *Congesta*	Tassel Three-awn	Grass	LC
Digitaria eriantha	Common finger grass	Grass	LC
Eragrostis curvula	Weeping lovegrass	Grass	LC
Hyparrhenia hirta	Common Thatching Grass	Grass	LC

2. Avifauna species

Species	Common Name	IUCN Conservation Status
Bostrychia hagedash	Hadada Ibis	LC
Corvus albus	Pied Crow	LC
Dicrurus adsimilis	Fork-tailed Drongo	LC
Myrmecocichla formicivora	Ant-eating Chat	LC
Oenanthe familiaris	Familiar Chat	LC
Euplectes orix	Southern Red Bishop	LC
Crithagra mozambica	Yellow-fronted Canary	LC
Corvus albus	Pied Crow	LC
Streptopelia capicola	Cape Turtle Dove	LC

3. Mammal species

Species	Common Name	IUCN Conservation Status
Procavia capensis	Rock Hyrax	LC

Appendix C: Historical mammal species records from the broader study area (VMS, Animal Demographic Unit).

NO.	Family	*Scientific name*	Common name	Red list category	Number of records	Last recorded
1	Bovidae	*Aepyceros melampus*	Impala	Least Concern	3	2018-10-04
2	Bovidae	*Alcelaphus buselaphus caama*	Red Hartebeest	Least Concern (2008)	1	2015-04-26
3	Bovidae	*Connochaetes taurinus*	Blue Wildebeest	Least Concern (ver 3.1, 2017)	1	2015-04-26
4	Bovidae	*Kobus ellipsiprymnus*	Waterbuck	Least Concern (ver 3.1, 2016)	1	2018-10-04
5	Bovidae	*Ourebia ourebi*	Oribi	Endangered	10	2012-12-31
6	Bovidae	*Taurotragus oryx*	Common Eland	Least Concern (2016)	2	2015-04-29
7	Bovidae	*Tragelaphus angasii*	Nyala	Least Concern (2016)	1	2018-10-04
8	Bovidae	*Tragelaphus strepsiceros*	Greater Kudu	Least Concern (2016)	2	2018-10-04
9	Canidae	*Canis mesomelas*	Black-backed Jackal	Least Concern (2016)	1	2015-04-27
10	Canidae	*Lycaon pictus*	African wild dog	Endangered (2016)	2	2006-01-01
11	Elephantidae	*Loxodonta africana*	African Bush Elephant	Vulnerable A2a (2008)	8	2018-10-04
12	Equidae	*Equus quagga*	Plains Zebra	Near Threatened (IUCN, 2016)	3	2018-10-04
13	Felidae	*Acinonyx jubatus*	Cheetah	Vulnerable (2016)	10	2012-12-31
14	Felidae	*Caracal caracal*	Caracal	Least Concern (2016)	1	
15	Felidae	*Felis silvestris*	Wildcat	Least Concern (2016)	1	1975-11-28
16	Felidae	*Leptailurus serval*	Serval	Near Threatened (2016)	1	
17	Felidae	*Panthera leo*	Lion	Least Concern (2016)	14	2012-12-31
18	Felidae	*Panthera pardus*	Leopard	Vulnerable (2016)	16	2012-12-31
19	Hippopotamidae	*Hippopotamus amphibius*	Common Hippopotamus	Least Concern (2016)	16	2015-04-28
20	Leporidae	*Lepus saxatilis*	Scrub Hare	Least Concern	1	2018-10-04
21	Muridae	*Grammomys dolichurus*	Common Grammomys	Least Concern (2016)	1	1993-06-15
22	Muridae	*Mastomys natalensis*	Natal Mastomys	Least Concern (2016)	1	1993-07-29
23	Soricidae	*Myosorex sp.*	Mouse Shrews		3	1993-06-15

Appendix D: Historical reptile species records from the broader study area (VMS, Animal Demographic Unit).

NO.	Family	*Scientific name*	Common name	Red list category	Number of records	Last recorded
1	Agamidae	*Acanthocercus atricollis*	Southern Tree Agama	Least Concern (SARCA 2014)	1	2018-10-04
2	Elapidae	*Elapsoidea sundevallii sundevallii*	Sundevall's Garter Snake		1	1900-06-15
3	Elapidae	*Hemachatus haemachatus*	Rinkhals	Least Concern (SARCA 2014)	2	1900-06-15
4	Gekkonidae	*Pachydactylus vansoni*	Van Son's Gecko	Least Concern (SARCA 2014)	1	1919-11-20
5	Lacertidae	*Pedioplanis burchelli*	Burchell's Sand Lizard	Least Concern (SARCA 2014)	2	1973-04-16
6	Lamprophiidae	*Psammophis brevirostris*	Short-snouted Grass Snake	Least Concern (SARCA 2014)	1	1900-06-15
7	Pelomedusidae	*Pelomedusa galeata*	South African Marsh Terrapin	Not evaluated	1	1900-06-15
8	Viperidae	*Bitis arietans arietans*	Puff Adder	Least Concern (SARCA 2014)	1	1900-06-15

Appendix E: Historical frog species records from the broader study area (VMS, Animal Demographic Unit).

NO,	Family	*Scientific name*	Common name	Red list category	Number of records	Last recorded
1	Bufonidae	*Sclerophrys capensis*	Raucous Toad	Least Concern	1	2001-01-20
2	Bufonidae	*Sclerophrys gutturalis*	Guttural Toad	Least Concern (IUCN, 2016)	2	2001-01-20
3	Hyperoliidae	*Hyperolius marmoratus*	Painted Reed Frog	Least Concern (IUCN ver 3.1, 2013)	2	2011-08-11
4	Hyperoliidae	*Kassina senegalensis*	Bubbling Kassina	Least Concern	2	2001-01-20
5	Phrynobatrachidae	*Phrynobatrachus natalensis*	Snoring Puddle Frog	Least Concern (IUCN, 2013)	1	2000-12-11
6	Ptychadenidae	*Ptychadena oxyrhynchus*	Sharpnosed Grass Frog	Least Concern	1	
7	Pyxicephalidae	*Amietia sp.*		Not Evaluated	1	2014-04-02
8	Pyxicephalidae	*Amietia delalandii*	Delalande's River Frog	Least Concern (2017)	2	2001-01-20
9	Pyxicephalidae	*Amietia fuscigula*	Cape River Frog	Least Concern (2017)	1	2001-01-20
10	Pyxicephalidae	*Cacosternum boettgeri*	Common Caco	Least Concern (2013	1	2000-12-11
11	Pyxicephalidae	*Tomopterna cryptotis*	Tremelo Sand Frog	Least Concern	1	2001-01-20
12	Pyxicephalidae	*Tomopterna krugerensis*	Knocking Sand Frog	Least Concern	1	
13	Pyxicephalidae	*Tomopterna natalensis*	Natal Sand Frog	Least Concern	2	2001-01-20

Appendix F: SABAP 2 bird list of the area (BirdLife South Africa).

NO.	Common group	Common species	Genus	Species	Red list category (Global)
1		Bokmakierie	*Telophorus*	*zeylonus*	Not Evaluated
2		Brubru	*Nilaus*	*afer*	Not Evaluated
3		Hamerkop	*Scopus*	*umbretta*	Not Evaluated
4		Neddicky	*Cisticola*	*fulvicapilla*	Not Evaluated
5		African Quail-finch	*Ortygospiza*	*atricollis*	Not Evaluated
6		Secretarybird	*Sagittarius*	*serpentarius*	Endangered
7	Babbler	Arrow-marked	*Turdoides*	*jardineii*	Not Evaluated
8	Barbet	Acacia Pied	*Tricholaema*	*leucomelas*	Not Evaluated
9	Barbet	Black-collared	*Lybius*	*torquatus*	Not Evaluated
10	Barbet	Crested	*Trachyphonus*	*vaillantii*	Not Evaluated
11	Batis	Chinspot	*Batis*	*molitor*	Not Evaluated
12	Bee-eater	Little	*Merops*	*pusillus*	Not Evaluated
13	Bishop	Southern Red	*Euplectes*	*orix*	Not Evaluated
14	Bishop	Yellow-crowned	*Euplectes*	*afer*	Not Evaluated
15	Boubou	Southern	*Laniarius*	*ferrugineus*	Not Evaluated
16	Bulbul	Dark-capped	*Pycnonotus*	*tricolor*	Not Evaluated
17	Bustard	Denham's	*Neotis*	*denhami*	Near Threatened
18	Buzzard	Common	*Buteo*	*buteo*	Not Evaluated
19	Buzzard	Jackal	*Buteo*	*rufofuscus*	Not Evaluated
20	Canary	Black-throated	*Crithagra*	*atrogularis*	Not Evaluated
21	Canary	Yellow-fronted	*Crithagra*	*mozambica*	Not Evaluated
22	Chat	Ant-eating	*Myrmecocichla*	*formicivora*	Not Evaluated
23	Chat	Buff-streaked	*Campicoloides*	*bifasciatus*	Not Evaluated

24	Chat	Familiar	*Oenanthe*	*familiaris*	Not Evaluated
25	Cisticola	Cloud	*Cisticola*	*textrix*	Not Evaluated
26	Cisticola	Levaillant's	*Cisticola*	*tinniens*	Not Evaluated
27	Cisticola	Wing-snapping	*Cisticola*	*ayresii*	Not Evaluated
28	Cisticola	Zitting	*Cisticola*	*juncidis*	Not Evaluated
29	Coot	Red-knobbed	*Fulica*	*cristata*	Not Evaluated
30	Cormorant	Reed	*Microcarbo*	*africanus*	Not Evaluated
31	Crane	Blue	*Grus*	*paradisea*	Vulnerable
32	Crane	Grey Crowned	*Balearica*	*regulorum*	Endangered
33	Crow	Cape	*Corvus*	*capensis*	Not Evaluated
34	Crow	Pied	*Corvus*	*albus*	Not Evaluated
35	Cuckoo	Black	*Cuculus*	*clamosus*	Not Evaluated
36	Cuckoo	Diederik	*Chrysococcyx*	*caprius*	Not Evaluated
37	Cuckoo	Klaas's	*Chrysococcyx*	*klaas*	Not Evaluated
38	Cuckoo	Red-chested	*Cuculus*	*solitarius*	Not Evaluated
39	Cuckooshrike	Black	*Campephaga*	*flava*	Not Evaluated
40	Dove	Cape Turtle	*Streptopelia*	*capicola*	Not Evaluated
41	Dove	Emerald-spotted Wood	*Turtur*	*chalcospilos*	Not Evaluated
42	Dove	Laughing	*Spilopelia*	*senegalensis*	Not Evaluated
43	Dove	Red-eyed	*Streptopelia*	*semitorquata*	Not Evaluated
44	Drongo	Fork-tailed	*Dicrurus*	*adsimilis*	Not Evaluated
45	Duck	African Black	*Anas*	*sparsa*	Not Evaluated
46	Duck	White-faced Whistling	*Dendrocygna*	*viduata*	Not Evaluated
47	Duck	Yellow-billed	*Anas*	*undulata*	Not Evaluated
48	Eagle	African Fish	*Haliaeetus*	*vocifer*	Not Evaluated
49	Eagle	Crowned	*Stephanoaetus*	*coronatus*	Near Threatened

50	Eagle-Owl	Spotted	*Bubo*	*africanus*	Not Evaluated
51	Egret	Great	*Ardea*	*alba*	Not Evaluated
52	Egret	Western Cattle	*Bubulcus*	*ibis*	Not Evaluated
53	Falcon	Amur	*Falco*	*amurensis*	Not Evaluated
54	Falcon	Lanner	*Falco*	*biarmicus*	Least Concern
55	Firefinch	African	*Lagonosticta*	*rubricata*	Not Evaluated
56	Fiscal	Southern	*Lanius*	*collaris*	Not Evaluated
57	Flycatcher	African Paradise	*Terpsiphone*	*viridis*	Not Evaluated
58	Flycatcher	Fiscal	*Melaenornis*	*silens*	Not Evaluated
59	Flycatcher	Spotted	*Muscicapa*	*striata*	Not Evaluated
60	Francolin	Shelley's	*Scleroptila*	*shelleyi*	Not Evaluated
61	Goose	Egyptian	*Alopochen*	*aegyptiaca*	Not Evaluated
62	Goose	Spur-winged	*Plectropterus*	*gambensis*	Not Evaluated
63	Grassbird	Cape	*Sphenoeacus*	*afer*	Not Evaluated
64	Grebe	Little	*Tachybaptus*	*ruficollis*	Not Evaluated
65	Guineafowl	Helmeted	*Numida*	*meleagris*	Not Evaluated
66	Heron	Black-headed	*Ardea*	*melanocephala*	Not Evaluated
67	Heron	Grey	*Ardea*	*cinerea*	Not Evaluated
68	Hoopoe	African	*Upupa*	*africana*	Not Evaluated
69	Ibis	African Sacred	*Threskiornis*	*aethiopicus*	Not Evaluated
70	Ibis	Hadada	*Bostrychia*	*hagedash*	Not Evaluated
71	Ibis	Southern Bald	*Geronticus*	*calvus*	Vulnerable
72	Kestrel	Lesser	*Falco*	*naumanni*	Not Evaluated
73	Kingfisher	Brown-hooded	*Halcyon*	*albiventris*	Not Evaluated
74	Kingfisher	Malachite	*Corythornis*	*cristatus*	Not Evaluated
75	Kite	Black-winged	*Elanus*	*caeruleus*	Not Evaluated

76	Kite	Yellow-billed	*Milvus*	*aegyptius*	Not Evaluated
77	Korhaan	Red-crested	*Lophotis*	*ruficrista*	Not Evaluated
78	Koorhan	White-bellied	*Eupodotis*	*senegalensis*	Least Concern
79	Lapwing	African Wattled	*Vanellus*	*senegallus*	Not Evaluated
80	Lapwing	Blacksmith	*Vanellus*	*armatus*	Not Evaluated
81	Lapwing	Crowned	*Vanellus*	*coronatus*	Not Evaluated
82	Lark	Eastern Long-billed	*Certhilauda*	*semitorquata*	Not Evaluated
83	Lark	Melodious	*Mirafra*	*cheniana*	Not Evaluated
84	Lark	Rufous-naped	*Mirafra*	*africana*	Not Evaluated
85	Lark	Spike-heeled	*Chersomanes*	*albofasciata*	Not Evaluated
86	Longclaw	Cape	*Macronyx*	*capensis*	Not Evaluated
87	Martin	Banded	*Riparia*	*cincta*	Not Evaluated
88	Martin	Rock	*Ptyonoprogne*	*fuligula*	Not Evaluated
89	Moorhen	Common	*Gallinula*	*chloropus*	Not Evaluated
90	Mousebird	Red-faced	*Urocolius*	*indicus*	Not Evaluated
91	Mousebird	Speckled	*Colius*	*striatus*	Not Evaluated
92	Myna	Common	*Acridotheres*	*tristis*	Not Evaluated
93	Oriole	Black-headed	*Oriolus*	*larvatus*	Not Evaluated
94	Oxpecker	Red-billed	*Buphagus*	*erythrorynchus*	Not Evaluated
95	Pigeon	Speckled	*Columba*	*guinea*	Not Evaluated
96	Pipit	African	*Anthus*	*cinnamomeus*	Least Concern
97	Plover	Three-banded	*Charadrius*	*tricollaris*	Not Evaluated
98	Quelea	Red-billed	*Quelea*	*quelea*	Not Evaluated
99	Robin-Chat	Cape	*Cossypha*	*caffra*	Not Evaluated
100	Sandpiper	Wood	*Tringa*	*glareola*	Not Evaluated

101	Saw-wing	Black (Southern Africa)	*Psalidoprocne*	*pristoptera holomelas*	Not Evaluated
102	Seedeater	Streaky-headed	*Crithagra*	*gularis*	Not Evaluated
103	Shelduck	South African	*Tadorna*	*cana*	Not Evaluated
104	Snipe	African	*Gallinago*	*nigripennis*	Not Evaluated
105	Sparrow	Cape	*Passer*	*melanurus*	Not Evaluated
106	Sparrow	House	*Passer*	*domesticus*	Not Evaluated
107	Sparrow	Southern Grey-headed	*Passer*	*diffusus*	Not Evaluated
108	Sparrowhawk	Black	*Accipiter*	*melanoleucus*	Not Evaluated
109	Spoonbill	African	*Platalea*	*alba*	Not Evaluated
110	Spurfowl	Swainson's	*Pternistis*	*swainsonii*	Not Evaluated
111	Starling	Cape	*Lamprotornis*	*nitens*	Not Evaluated
112	Starling	Pied	*Lamprotornis*	*bicolor*	Not Evaluated
113	Starling	Red-winged	*Onychognathus*	*morio*	Not Evaluated
114	Stonechat	African	*Saxicola*	*torquatus*	Not Evaluated
115	Stork	White	*Ciconia*	*ciconia*	Not Evaluated
116	Sunbird	Amethyst	*Chalcomitra*	*amethystina*	Not Evaluated
117	Sunbird	Greater Double-collared	*Cinnyris*	*afer*	Not Evaluated
118	Sunbird	White-bellied	*Cinnyris*	*talatala*	Not Evaluated
119	Swallow	Barn	*Hirundo*	*rustica*	Not Evaluated
120	Swallow	Greater Striped	*Cecropis*	*cucullata*	Not Evaluated
121	Swallow	Lesser Striped	*Cecropis*	*abyssinica*	Not Evaluated
122	Swallow	South African Cliff	*Petrochelidon*	*spilodera*	Not Evaluated
123	Swallow	White-throated	*Hirundo*	*albigularis*	Not Evaluated
124	Swift	African Palm	*Cypsiurus*	*parvus*	Not Evaluated
125	Swift	White-rumped	*Apus*	*caffer*	Not Evaluated

126	Teal	Red-billed	*Anas*	*erythrorhyncha*	Not Evaluated
127	Thick-knee	Spotted	*Burhinus*	*capensis*	Not Evaluated
128	Thrush	Karoo	*Turdus*	*smithi*	Not Evaluated
129	Tinkerbird	Red-fronted	*Pogoniulus*	*pusillus*	Not Evaluated
130	Vulture	Cape	*Gyps*	*coprotheres*	Vulnerable
131	Vulture	White-backed	*Gyps*	*africanus*	Critically endangered
132	Wagtail	Cape	*Motacilla*	*capensis*	Not Evaluated
133	Warbler	Lesser Swamp	*Acrocephalus*	*gracilirostris*	Not Evaluated
134	Waxbill	Blue	*Uraeginthus*	*angolensis*	Not Evaluated
135	Waxbill	Common	*Estrilda*	*astrild*	Not Evaluated
136	Weaver	Cape	*Ploceus*	*capensis*	Not Evaluated
137	Weaver	Southern Masked	*Ploceus*	*velatus*	Not Evaluated
138	Weaver	Spectacled	*Ploceus*	*ocularis*	Not Evaluated
139	Weaver	Thick-billed	*Amblyospiza*	*albifrons*	Not Evaluated
140	Weaver	Village	*Ploceus*	*cucullatus*	Not Evaluated
141	White-eye	Cape	*Zosterops*	*virens*	Not Evaluated
142	Whydah	Pin-tailed	*Vidua*	*macroura*	Not Evaluated
143	Widowbird	Fan-tailed	*Euplectes*	*axillaris*	Not Evaluated
144	Widowbird	Long-tailed	*Euplectes*	*progne*	Not Evaluated
145	Widowbird	Red-collared	*Euplectes*	*ardens*	Not Evaluated
146	Wood-hoopoe	Green	*Phoeniculus*	*purpureus*	Not Evaluated
147	Woodpecker	Cardinal	*Dendropicos*	*fuscescens*	Not Evaluated

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