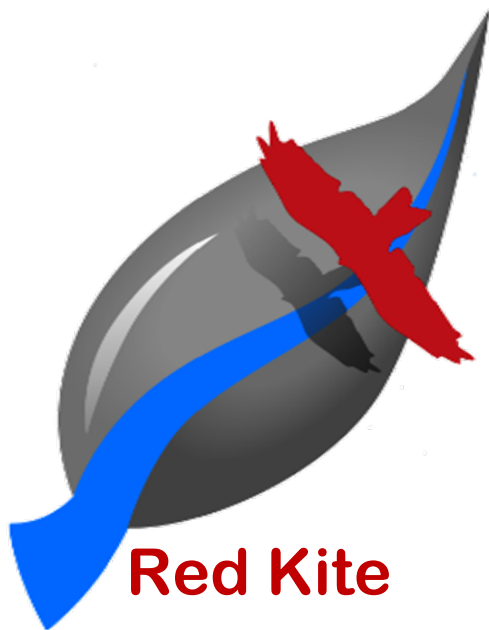


**DESKTOP
TERRESTRIAL ECOLOGY
ASSESSMENT
FOR
SALENE MANGANESE (PTY) LTD:
NW NICKEL PROJECT
PROSPECTING RIGHT**

**IN THE RAMOTSHERE MOILOA LOCAL
MUNICIPALITY,**

NORTH WEST PROVINCE

NOVEMBER 2021



Red Kite

Environmental Solutions

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Project Reference: RK/2021/SM/TEA/V3

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Executive Summary

Red Kite Environmental Solutions (Pty) Ltd (“Red Kite”) was appointed by Prescali Environmental Consultants (Pty) Ltd to conduct a desktop Terrestrial Ecology Assessment for the Salene Manganese (Pty) Ltd NW Nickel Project Prospecting Right application, situated in the Ramotshere Moiloa Local Municipality and the Ngaka Modiri Molema District Municipality of the North West Province.

Information on plant species previously recorded for the project area was extracted from the POSA online database hosted by SANBI. The results indicate that 90 plant species have been recorded in the area queried:

- Two Species of Conservation Concern (SCC) in terms of their Red List status have been recorded on POSA for the area queried. One additional flora species was listed for the project area in the Environmental Screening Tool Report. All of these flora SCC are considered to have a low likelihood of occurrence on the project area.
- Two of the flora species recorded on POSA for the area are listed as protected in the NWBMA.
- Two protected tree species, in terms of the NFA, have been recorded on POSA for the area queried.
- Seven of the flora species recorded on POSA for the area are known to have medicinal uses.
- One exotic plant species was recorded to occur within the area queried.
- Five endemic plant species were recorded to occur within the area queried.

A desktop study was conducted to establish whether any potentially sensitive faunal species or species of conservation concern may possibly occur on site. The Virtual Museum and Animal Demography Unit (ADU) was used to compile species lists based on the sightings and data gathered from the South African Biodiversity Institute.

National SCC include mammalian and avifaunal species which are known to occur in the regional area where the project is proposed. Provincially protected species could also be expected to occur in the region. The following summary of the findings are provided:

- Mammals: 94 mammal species were found to possibly occur within the QDS, of which many are provincial SCC. Eighteen (18) of these species are SCC in a national context. The other species, largely game species, have a provincially protected status.
- Avifaunal: 274 bird species listed are listed for the area of which 11 are national SCC.
- Butterflies: 76 butterfly species were recorded for the area queried of which none are categorised as SCC nationally. However, all Charaxes butterflies are provincially protected.
- Other invertebrates: Nine Lacewing species, 24 Dung beetles and four Odonata were listed for the QDS, none of which are listed as SCC in the IUCN Red List. None of these species are national SCC, however, all Dung beetle species are provincially protected.
- Reptiles: 36 reptile species were recorded for the QDS, none of which are considered national SCC. Several of these species are provincially protected.
- Amphibians: 20 amphibian species were listed for the QDS, but none of these species are considered SCC.

No field survey was conducted for the assessment and all results given within this document are based on desktop findings and assessments. Therefore, the results, typical flora, herpetofauna, avifauna and mammalian communities found within the study should/can therefore only be used as a general guideline.

The project area is located on three vegetation types, namely Dwaalboom Thornveld (SVcb 1), Zeerust Thornveld (SVcb 3) and Dwarsberg-Swartruggens Mountain Bushveld (SVcb 4). All three vegetation types occurring on the project area are not listed in the “National List of Ecosystems that are Threatened and need of protection”, and as Least Concern by the 2018 National Biodiversity Assessment.

The study area contains the following classes from the NWBSP:

- CBA2: A few smaller, isolated CBA2 areas are located on the Prospecting Right area. These CBA2 areas on the project area appear to be largely associated with ridges and koppies and potential wetland features.

- ESA1: Larger, continuous ESA1 areas occur on the project area. The majority of the ESA1 areas are located on the eastern sections of the Prospecting Right area. These areas were most likely identified as ESA 1 areas due to their appearance as natural areas and their function as ecological corridors providing connectivity.
- ESA2: A few small, isolated ESA2 areas are located on the project footprint. These areas appear to be associated with vegetation previously disturbed by agricultural activities that fall within the ESA1 areas.

According to the South African Protected Areas Database (SAPAD) a number of Protected Areas, in terms of NEMPAA, are located within 10 km of the Prospecting Right area:

1. Madikwe Nature Reserve – 6 km north of PR area
2. Tweekoppiesfontein Private Nature Reserve – adjacent to western border of northern-most PR portion
3. Nellie Private Nature Reserve – 1 km west of PR area
4. Drie Annie Private Nature Reserve – adjacent to western-most portion of PR area
5. Koos Swart Private Nature Reserve – 4 km west of PR area
6. Thys Snyman Private Nature Reserve – 6 km west of PR area
7. Hillendale Private Nature Reserve – 8 km south of PR area

The NW/Gauteng Bushveld NPAES area is located on portions of the northern section of the Prospecting Right area.

Various perennial and non-perennial rivers and streams flow across the Prospecting Right area. The most notable are:

- The Sehubyane River and its tributary, the Sandsloot River, flow through the southern section of the Prospecting Right area.
- The Madikwe River flows along the eastern border of the northern section of the Prospecting Right area.
- The Sehubyane River and Madikwe River confluence to form the Marico River, which flows in proximity to the eastern border of the northern section of the Prospecting Right area

Rivers and streams serve as ecological corridors, enable site and landscape level connectivity, and support ecological processes and are therefore considered to be of high ecological sensitivity.

The Prospecting Right area is located in a Freshwater Ecosystem Priority Area (FEPA), Phase 2 FEPA and Upstream FEPA.

From satellite imagery of the project area the following impacts are apparent:

- A number of formal and informal roads are located across the Prospecting Right area. Impacts from human and vehicle movement on these roads are expected.
- Mining activities have taken place or are currently taking place in the western-most portion of the Prospecting Right area.
- Current and historic agricultural activities, including crop farming and grazing.

Based on the desktop assessment findings, the specialist concurs with the sensitivity as presented on the National Web-based Environmental Screening Tool, with the inclusion of all rivers and streams as high sensitivity.

Sensitive ridge / koppie, riverine and riparian vegetation habitat constitute the most important features which make up the area identified as increased sensitivity. Suitable ecological buffers should be calculated for the river system and the infrastructure should keep clear of these sensitive areas.

It is the reasoned opinion of the specialist that the development may continue if all mitigation measures are implemented from the onset of the development.

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Abbreviations


AIP	Alien Invasive Plant
ADU	Animal Demographic Unit
CBA	Critical Biodiversity Area
CITES	Convention on International Trade in Endangered Species
DFFE	Department of Forestry, Fisheries and the Environment
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Priority Area
IBA	Important Birding Area
IDP	Integrated Development Plan
IUCN	International Union for Conservation of Nature and Natural Resources
LC	Least Concern
NBA	National Biodiversity Assessment
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NEMPAA	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
NFA	National Forests Act, 1998 (Act No. 84 of 1998)
NFEPA	National Freshwater Ecosystem Priority Areas
NPAES	National Protected Area Expansion Strategy
NWBMA	North West Biodiversity Management Act (Act No. 4 of 2016)
NWBSP	North West Biodiversity Sector Plan
POSA	Plants of Southern Africa
QDS	Quarter Degree Squares
SABAP2	South African Bird Atlas Project 2
SABCA	South African Butterfly Conservation Assessment
SACAD	South African Conservation Areas Database
SANBI	South African National Biodiversity Institute
SAPAD	South African Protected Areas Database
SARCA	South African Reptile Conservation Assessment
SCC	Species of Conservation Concern
ToPS	Threatened and Protected Species List (2007) as part of the National Environmental Management: Biodiversity Act (Act 10 of 2004)
VU	Vegetation Unit



Declaration of Independence


I, Nicole Upton, declare that -

- I act as the independent specialist;
- I will perform the work relating to the project in an objective manner, even if this results in views and findings that are not favourable to the project proponent;
- 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 project, including knowledge of the National Environmental Management Act, 1998 (Act No. 107 of 1998; 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 will take into account, to the extent possible, the matters listed in Regulation 8;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the project proponent 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 project; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority or project proponent;
- All the particulars furnished by me in this document are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

Signature of Specialist	
Name of Company	Red Kite Environmental Solutions (Pty) Ltd ("Red Kite")
Date	15/11/2020

I, Corlien Lambrechts, declare that -

- I act as the independent specialist;
- I will perform the work relating to the project in an objective manner, even if this results in views and findings that are not favourable to the project proponent;
- 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 project, including knowledge of the National Environmental Management Act, 1998 (Act No. 107 of 1998; 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 will take into account, to the extent possible, the matters listed in Regulation 8;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the project proponent 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 project; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority or project proponent;
- All the particulars furnished by me in this document are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

Signature of Specialist	
Name of Company	External for Red Kite Environmental Solutions (Pty) Ltd ("Red Kite")
Date	15/11/2020

1. INTRODUCTION

Red Kite Environmental Solutions (Pty) Ltd (“Red Kite”) was appointed by Prescali Environmental Consultants (Pty) Ltd to conduct a desktop Terrestrial Ecology Assessment for the Salene Manganese (Pty) Ltd NW Nickel Project Prospecting Right application, situated in the Ramotshere Moiloa Local Municipality and the Ngaka Modiri Molema District Municipality of the North West Province.

The Prospecting Right area consist of the following farm portions:

- Turfbult Alias Kanaan 10-JP
- Driekop 14-JP
- Goudini 30-JP
- Roode Kopjes Put 32-JP
- Kuilenburg 39-JP
- Knapdaar 26-JP
- Roodekopjesfontein 15-JP
- Leeuwkopje 952-KP
- Barboonrandjes 933-KP
- Brakfontein 132-KP
- Tweekoppiesfontein 143-KP
- Bedford 142-KP
- Barbed 948-KP
- Barkop 949-KP
- Schoonlaagte 935-KP
- Rooderand 41-JP
- Farm 10 902-JP
- Doornlaagte 51-JP
- Giglio 42-JP
- Magdalenas Kuil 37-JP

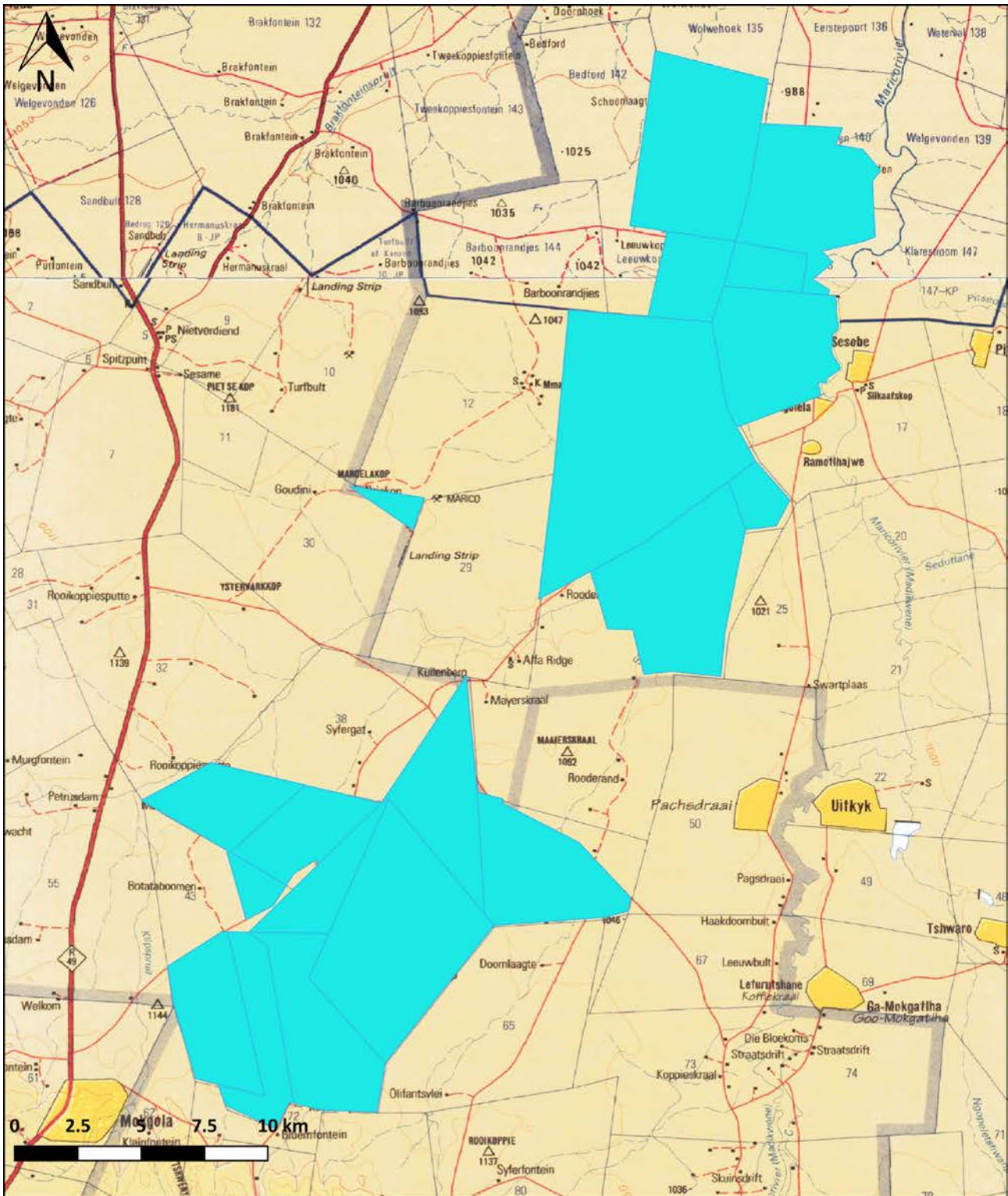
The Prospecting Right area being applied for is 37 474 ha in extent.

The minerals being applied for as part of the Prospecting Right are: nickel, silver, copper, gold, cobalt, Platinum Group Metals (PGM), chrome Rare Earth Element (REE), titanium, barium and magnetite.

Invasive prospecting activities will consist of drilling.

The objectives of the fauna and flora assessment include:

- Identify sensitive areas and species that should be avoided during the proposed development.
- Make use of the South African Biodiversity Institute Database to obtain specialised information and previous surveys within the area.
- Summarise legislation pertaining to the project with regard to biodiversity.
- Highlight major concern or fatal flaws of the project with regard to biodiversity.
- Provide relevant mitigations and recommendations to the developer to help limit and minimise the impacts they may have on the fauna and flora of the area.



<p>Locality</p> <p>Salene Manganese (Pty) Ltd: NW Nickel Project</p>		<p>Legend</p> <p> Prospecting Right Area</p>	<p>Red Kite Environmental Solutions Nicole Upton 079 555 2433 nicole@redkiteconsulting.co.za</p>
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Figure 1: Locality of the proposed Prospecting Right area

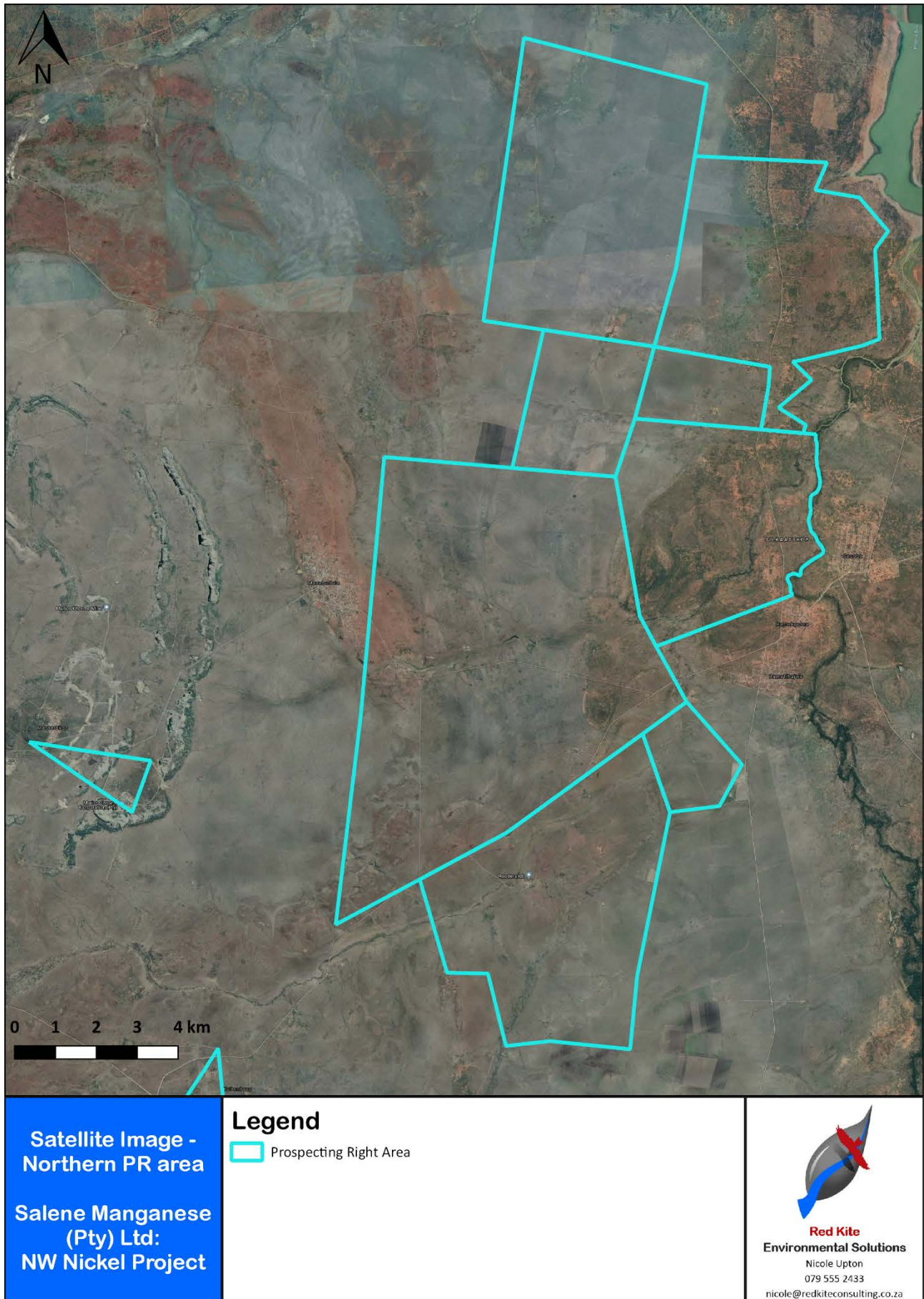
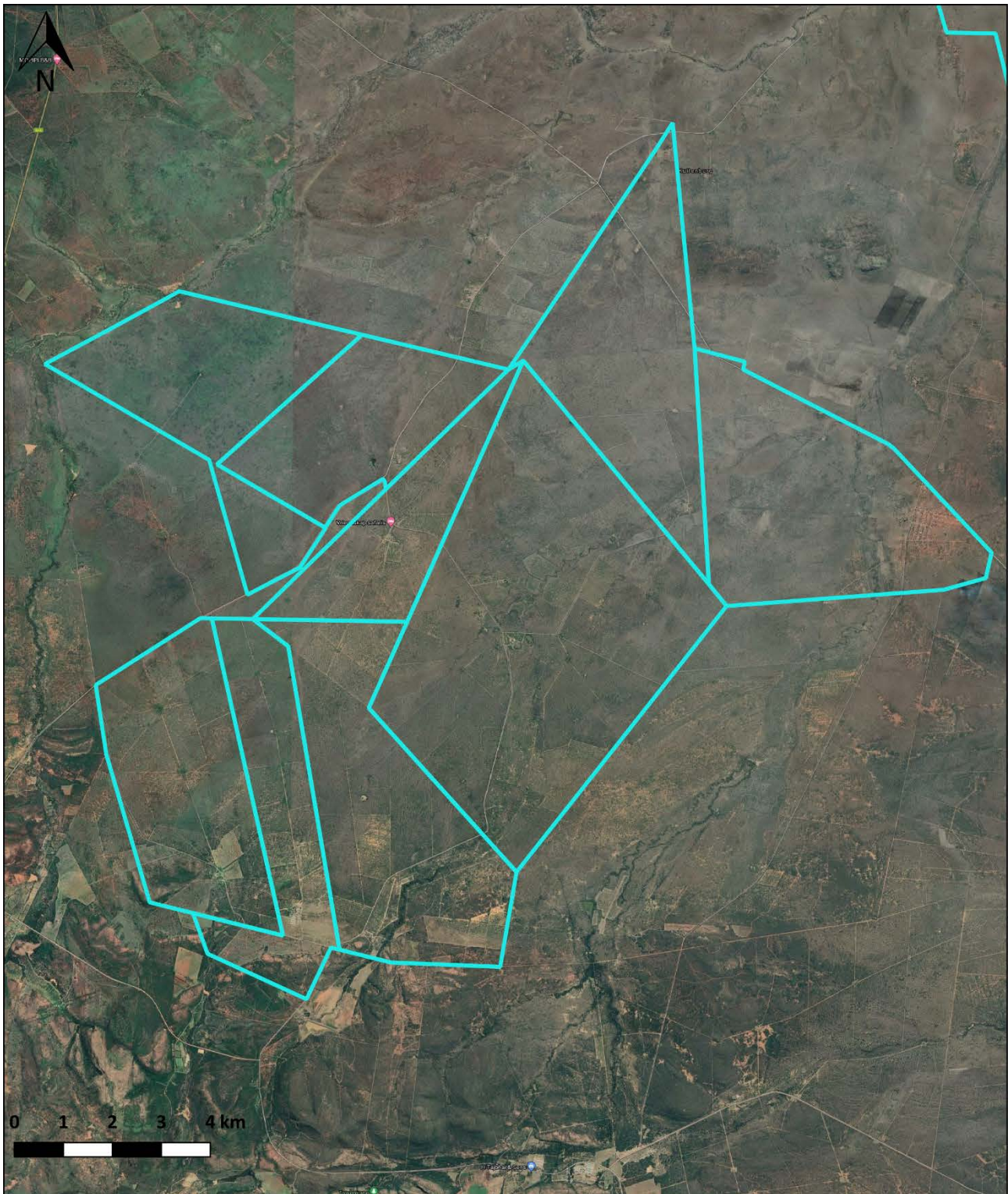


Figure 2: Satellite image of the northern section of the Prospecting Right area



<p>Satellite Image - Southern PR area</p> <p>Salene Manganese (Pty) Ltd: NW Nickel Project</p>	<p>Legend</p> <p> Prospecting Right Area</p>	 <p>Red Kite Environmental Solutions Nicole Upton 079 555 2433 nicole@redkiteconsulting.co.za</p>
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Figure 3: Satellite image of the southern section of the Prospecting Right area

2. SCOPE OF THE STUDY

Red Kite Environmental Solutions was appointed to conduct a Desktop Terrestrial Ecology Assessment as one of the specialist studies for the Environmental Authorisation process for the project. This Terrestrial Ecology Assessment consist of a desktop study, which includes the following:

- A desktop vegetation study, which included:
 - Classification of the main biome and description of the dominant vegetation type;
 - Investigation of the dominant indigenous species within this region;
 - Listing the endemic species;
 - Listing species of conservation concern; and
 - Determining the medicinal species.

- A desktop invertebrate and mammal study, which included determining the:
 - Endemic species;
 - Baseline occurrences of species within the area;
 - Virtual Museum and Animal Demographic Unit consultation; and
 - Listing species of conservation concern.

No field assessment was conducted to verify or dispute the findings as obtained during the desktop assessment.

The information from the desktop study was used to report on the following:

- General description of the biodiversity components in the study area;
- Description and mapping of the broad vegetation types identified in the study area
- Identify sensitive areas and species that should be avoided by the proposed development.
- Make use of the South African Biodiversity Institute Database to obtain specialised information and previous surveys within the area.
- Summarise legislation pertaining to the project with regard to biodiversity.
- Highlight major concern or fatal flaws of the project with regard to biodiversity.
- Identify potential impacts to terrestrial ecology aspects and determine the potential significance of these impacts.
- Provide relevant mitigations and recommendations to limit and minimise the impacts the activities may have on the fauna and flora of the area.

3. LEGISLATION

The aim of this component of the report is to provide a brief overview of the pertinent policies, as well as legal and administrative requirements applicable to biodiversity aspects of the proposed development.

3.1. The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)

This Act embraces all three fields of environmental concern namely:

- i) resource conservation and exploitation;
- ii) pollution control and waste management; and
- iii) land use planning and development.

3.1.1. National Environmental Management Biodiversity Act (Act No. 10 Of 2004) (NEMBA)

The following aspects of the NEMBA are important to consider in the compilation of an ecological report:

- Lists of ecosystems that are threatened or in need of national protection;
 - Links to Integrated Environmental Management processes;
 - Must be taken into account in Environmental Management Plans (EMP) and Integrated Development Plans (IDPs);
 - The Minister may make regulations to reduce the threats to listed ecosystems.
- **Threatened or Protected Species List (ToPS List) – Government Gazette Notice No. 151 of 2007**
“National Environmental Management: Biodiversity Act, 2004 (Act No. 10 Of 2004): Publication of Lists of Critically Endangered, Endangered, Vulnerable and Protected Species”

The status provided by the Government Gazette in terms of Notice 151 implies:

- Critically endangered: Section 56(1)(a) applies to the species awarded this status in terms of NEMBA, meaning: *“Critically endangered species, being any indigenous species facing an extremely high risk of extinction in the wild in the immediate future”*
 - Endangered species: Section 56(1)(b) applies to the species awarded this status in terms of NEMBA, meaning: *“Endangered species, being any indigenous species facing a high risk of extinction in the wild in the near future, although they are not a critically endangered species”*
 - Vulnerable species: Section 56(1)(c) applies to the species awarded this status in terms of NEMBA, meaning: *“Vulnerable species, being any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future, although they are not a critically endangered species or an endangered species”*
 - Protected species: Section 56(1)(d) applies to the species awarded this status in terms of NEMBA, meaning: *“Protected species, being any species, which are of such high conservation value or national importance that they require national protection, although they are not listed in terms of paragraph (a), (b) or (c)”*
- **Alien and Invasive Species List - Government Gazette Notice No. 598 of 2014 [as amended]**
The Department of Forestry, Fisheries and Environment (DFFE) manages Invasive Alien Species (IAS) under the NEMBA.

The four different categories that NEMBA classify AIPs under are:

- Category 1a: A person in control of a Category 1a Listed Invasive Species must immediately take steps to combat or eradicate listed invasive species and officials from the DEFF must be allowed access to monitor or

assist with control. If an Invasive Species Management Programme has been developed in terms of section 75(4) of the Act, a person must control the listed invasive species in accordance with such programme.

- Category 1b: A person in control of a Category 1b Listed Invasive Species must control the listed invasive species. If an Invasive Species Management Programme has been developed in terms of section 75(4) of the Act, a person must control the listed invasive species in accordance with such programme. The Minister may require any person to develop a Category 1b Control Plan for one or more Category 1b species. Officials from the DFFE must be allowed access to monitor or assist with control.
- Category 2: These are invasive species that can remain in your garden, but only with a permit. A person in control of a Category 2 Listed Invasive Species, or person in possession of a permit, must ensure that the specimens of the species do not spread outside of the land or the area specified in the Notice or permit. Any species listed as a Category 2 Listed Invasive Species that occurs outside the specified area (permit) must, for purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed accordingly.
- Category 3: These are invasive species that can remain on your property. However, you cannot propagate or sell these species and must control them in your garden. In riparian zones or wetlands all category 3 plants become category 1b plants.
- **National List of Ecosystems that are threatened and in need of protection - Government Gazette Notice No. 1002 of 2011**

The National Environmental Management Biodiversity Act (Act 10 of 2004) (NEMBA) provides for listing of threatened or protected ecosystems, in one of four categories:

- Critically Endangered: these have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation;
- Endangered: these have undergone degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems;
- Vulnerable: these have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems; or
- Protected: these have a high conservation value or of high national or provincial importance, although they are not listed as critically endangered, endangered or vulnerable.

Threatened ecosystems are listed in order to reduce the rate of ecosystem and species extinction by preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to conserve sites of exceptionally high conservation value (SANBI, BGIS).

3.2. The National Forest Act, 1998 (Act No. 84 of 1998) (NFA)

The National Forests Act:

- Promotes the sustainable management and development of forests for the benefit of all;
- Creates the conditions necessary to restructure forestry in State Forests;
- Provide special measures for the protection of certain forests and protected trees;
- Promotes the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes; and
- Promotes community forestry.

In terms of the NFA, forest trees or protected tree species may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold – except under license granted by the Department of Forestry, Fisheries and Environment (DFFE).

The list of protected trees has been published in terms of Section 12 (1) (d) of the NFA, in Government Gazette No. 536 of 2018.

3.3. Focus Areas for Protected Area Expansion – NPAES (2008)

The goal of the National Protected Area Expansion Strategy (NPAES) is to achieve cost effective protected area expansion for ecological sustainability and adaptation to climate change. The NPAES sets targets for protected area expansion, provides maps of the most important areas for protected area expansion, and makes recommendations on mechanisms for protected area expansion. It deals with land-based and marine protected areas across all of South Africa's territory (SANBI, BGIS).

3.4. National Biodiversity Assessment (NBA; 2018)

The National Biodiversity Assessment (NBA) is the primary tool for monitoring and reporting on the state of biodiversity in South Africa and is prepared as part of the SANBI mandate under the National Environmental Management: Biodiversity Act (Act 10 of 2004). It is used to inform policies, strategies and actions in a range of sectors for managing and conserving biodiversity more effectively.

The NBA focusses primarily on assessing biodiversity at the ecosystem and species level, and the two headline indicators of threat status and protection level are applied to both ecosystems and species in the four realms (terrestrial, inland aquatic, estuarine and marine) and in two cross-realm areas (the coast and South Africa's sub-Antarctic territory). These established headline indicators provide a way of comparing results meaningfully across the realms, and a standardised framework that links with policy and legislation in South Africa to facilitate an effective interface between science and policy. Underlying the headline indicators is a wealth of geographically detailed information that can be applied at the provincial and local level.

The latest NBA (NBA 2018) was released in October 2019 and builds on the National Spatial Biodiversity Assessment 2004 and the NBA 2011.

3.5. The North-West Biodiversity Management Act, 2016 (Act No. 4 of 2016) (NWBMA)

The purpose of the NWBMA is to provide for:

- The management and conservation of the North West Province's biophysical environment and protected areas within the framework of the NEMA;
- The protection species and ecological systems that warrant provincial protection; and
- The sustainable use of indigenous biological resources.

The following sections are of importance:

- Schedule 2: Specially Protected Species;
- Schedule 3: List of ordinary species;
- Schedule 4: List of ordinary species to be hunted with landowner's written consent.

The NWBA provides the following restrictions regarding specially protected species:

15 (1) Any person who intends to carry out a restricted activity involving specimen of listed specially protected species must do so by means of a permit issued in terms of Chapter 8.

The NWBMA defines “restricted activity” as:

- (a) hunting, catching, capturing, or killing any living specimen by any means, method or device whatsoever, including searching, pursuing, driving, lying in wait, luring, alluring, discharging a missile, obstructing free passage or injuring with intent to hunt, catch, capture or kill any such specimen;*
- (b) gathering, collecting or plucking any such specimen;*
- (c) picking parts of, or cutting, chopping off, uprooting, damaging or destroying any such specimen;*
- (d) importing into the Province, including introducing from the sea, any such specimen;*
- (e) exporting from the Province, including re-exporting from the Province, any such specimen;*
- (f) having in possession or exercising physical control over such specimen;*
- (g) growing, breeding or in any other way propagating any such specimen, or causing it to multiply;*
- (h) conveying, moving or otherwise translocating any such specimen;*
- (i) selling or otherwise trading, buying, receiving, giving, donating or accepting as a gift, or in any way acquiring or disposing of any such specimen;*
- (j) damaging, disturbing or destroying the breeding site or habitat of any such specimen; or*
- (k) any other prescribed activity which involves a specimen of a listed species.*

This Act must be interpreted and applied in accordance with the national environmental management principles set out in Section 2 of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

4. METHODS AND APPROACH

This report is based on a literature review and GIS analysis of the proposed development. The literature review included scientific and popular publications on related aspects for the area. Internet searches for ecological issues in the area and Red Data plant and animal species were performed. The Google search engine was used for information pertaining to Red Data flora and fauna and their habitat preferences.

A baseline assessment was conducted to establish whether any potentially sensitive species / receptors might occur on site. The South African National Biodiversity Institute's (SANBI) online biodiversity tool and the Virtual Museum and Animal Demography Unit (ADU) was used to query species lists for the project area.

The National Web Based Environmental Screening Tool, hosted by the Department of Forestry, Fisheries and Environment, was also used to determine geographically based sensitivity information in terms of terrestrial ecology, and animal and plant species themes, including potential sensitive species associated with the region.

Aerial photographs and satellite imagery were used to delineate potential sensitive habitat types and these were used as suitable method to identify sensitive areas at a desktop level.

No field survey was conducted for the assessment and all results given within this document is based on desktop findings and assessments.

4.1. Data Sourcing

The data sources consulted and used where necessary in the study includes the following:

- Vegetation types and their conservation status were extracted from the South African National Vegetation Map (Mucina and Rutherford 2006) (updated 2018).
- Information on plant species recorded for the project area was extracted from the Plants of Southern Africa (POSA) database hosted by SANBI.
- The IUCN conservation status of the species recorded for the area queried on POSA was also extracted from the database and is based on the Threatened Species Programme, Red List of South African Plants.
- Threatened Ecosystem data was extracted from the NEM:BA listed ecosystems layer (2011 and 2018).
- Information on Critical Biodiversity Areas (CBA) was extracted from the North West Biodiversity Sector Plan.
- Protected areas expansion areas were extracted from the National Protected Areas Expansion Strategy 2008 (NPAES).
- Protected Areas, in terms of the NEMPAA, was extracted from the DFFE Protected Areas Register.
- Lists of mammals, reptiles and amphibians which are likely to occur at the site were derived based on distribution records from the literature and various spatial databases (SANBI's SIBIS and BGIS databases).
- Bird species lists for the area were extracted from the SABAP 1 and SABAP 2 databases and Birdlife South Africa's Important Bird Areas was also consulted to ascertain if the site falls within the range of any range-restricted or globally threatened species.
- The faunal species lists provided are based on species which are known to occur in the broad geographical area.
- The conservation status of each species is also listed, based on the latest IUCN Red List Categories and Criteria and where species have not been assessed under these criteria, the CITES status is reported where possible.

4.2. Limitations and Assumptions

The desktop study was conducted with up to date resources. It might however be possible that additional information become available in time, because environmental impact assessments deal with dynamic natural ecosystems. It is therefore important that the report be viewed and acted upon with these limitations in mind.

No field survey was conducted for the assessment and all results given within this document are based on desktop findings and assessments. Therefore, the results, typical flora, herpetofauna, avifauna and mammalian communities found within the study should/can therefore only be used as a general guideline.

No detailed description or layout was provided to the specialist for this project and as such the impacts and their ratings are based on broad generalisations.

The specialist responsible for this study reserves the right to amend this report, recommendations and/or conclusions at any stage should any additional or otherwise significant information come to light.



5. FLORA

5.1. Biomes

The project area lies within the Savanna Biome, which is the largest biome in South Africa, covering 34.3% of the country (about 435 000 km²). It is a mixture of grasses and trees or shrubs. Savanna stretches from the Kalahari in the north-west across to the lowveld in the north-east and southwards to the lowlands of KwaZulu Natal and the Eastern Cape. It is found from sea level to about 2 000 metres above sea level. More than 5 700 plant species grow in the Savanna Biome. They include various types of grasses (e.g. Rooigras) and trees like the Baobab, Mopane, Camel Thorn and Knob Thorn.

Rain falls in summer and varies greatly across the region, from about 235 mm per year in the Kalahari to over 1000 mm per year in the east.

5.2. Vegetation Types

Three vegetation types, according to Mucina & Rutherford (2006), occur in the project area, namely Dwaalboom Thornveld (SVcb 1), Zeerust Thornveld (SVcb 3) and Dwarsberg-Swartruggens Mountain Bushveld (SVcb 4).

A description of the vegetation types, extracted from the CD accompanying Mucina & Rutherford (2006), is presented below.

5.2.1. Dwaalboom Thornveld (SVcb 1)

Approximately 23 260 ha of the Prospecting Right area falls within the Dwaalboom Thornveld vegetation type.

The Dwaalboom Thornveld vegetation type occurs in the Limpopo and North-West Provinces, on the flats north of the Dwarsberge and associated ridges, mainly west of the Crocodile River in the Dwaalboom area but including a patch around Sentrum. South of the ridges it extends eastwards from the Nietverdiend area, north of the Pilanesberg to the Northam area.

The vegetation type is characterised by plains with a layer of scattered, low to medium high, deciduous microphyllous trees and shrubs with a few broad-leaved tree species, and an almost continuous herbaceous layer dominated by grass species.

A list of expected common and dominant species in undisturbed vegetation includes the following (those with a "d" are considered to be dominant) (Mucina and Rutherford, 2006):

- **Trees:** *Vachellia erioloba*, *Vachellia erubescens* (d), *V. nilotica* (d), *V. tortilis* subsp. *heteracantha* (d), *Senegalia fleckii*, *S. mellifera* subsp. *detinens*, *Combretum imberbe*, *Searsia lancea*, *Ziziphus mucronata*.
- **Shrubs:** *Vachellia hebeclada* subsp. *hebeclada*, *Combretum hereroense*, *Diospyros lycioides* subsp. *lycioides*, *Euclea undulata*, *Grewia flava*, *Tarchonanthus camphoratus*, *Vachellia tenuispina* (d), *Abutilon austro-africanum*, *Aptosimum elongatum*, *Hirpicium bechuanense*, *Pavonia burchellii*, *Solanum delagoense*, *Kalanchoe rotundifolia*, *Talinum caffrum*.
- **Graminoids:** *Aristida bipartita* (d), *Bothriochloa insculpta* (d), *Digitaria eriantha* subsp. *eriantha* (d), *Ischaemum afrum* (d), *Panicum maximum* (d), *Cymbopogon pospischilii*, *Eragrostis curvula*, *Sehima galpinii*, *Setaria incrassata*.
- **Herbs:** *Heliotropium ciliatum*, *Kohautia caespitosa* subsp. *brachyloba*, *Nidorella hottentotica*, *Rhynchosia minima*.

5.2.2. Zeerust Thornveld (SVcb 3)

Approximately 14 190 ha of the Prospecting Right area falls within the Zeerust Thornveld vegetation type.

The Zeerust Thornveld vegetation type occurs in the North-West Province and extends along the plains from the Lobatsi River in the west via Zeerust, Groot Marico and Mabaalstad to the flats between the Pilanesberg and western end of the Magaliesberg in the east.

The vegetation type is characterised by deciduous, open to dense short thorny woodland, dominated by *Acacia* species with herbaceous layer of mainly grasses on deep, high base-status and some clay soils on plains and lowlands, also between rocky ridges of SVcb 4 Dwarsberg-Swartruggens Mountain Bushveld.

A list of expected common and dominant species in undisturbed vegetation includes the following (those with a "d" are considered to be dominant) (Mucina and Rutherford, 2006):

- **Trees:** *Senegalia burkei* (d), *Vachellia erioloba* (d), *Senegalia mellifera* subsp. *detinens* (d), *Vachellia nilotica* (d), *V. tortilis* subsp. *heteracantha* (d), *Searsia lancea* (d), *Senegalia fleckii*, *Peltophorum africanum*, *Terminalia sericea*.
- **Shrubs:** *Diospyros lycioides* subsp. *lycioides*, *Grewia flava*, *Mystroxydon aethiopicum* subsp. *Burkeanum*, *Agathisanthemum bojeri*, *Chaetacanthus costatus*, *Clerodendrum ternatum*, *Indigofera filipes*, *Searsia grandidens*, *Sida chrysantha*, *Stylosanthes fruticosa*.
- **Graminoids:** *Eragrostis lehmanniana* (d), *Panicum maximum* (d), *Aristida congesta*, *Cymbopogon pospischilii*.
- **Herbs:** *Blepharis integrifolia*, *Chamaecrista absus*, *C. mimosoides*, *Cleome maculata*, *Dicoma anomala*, *Kyphocarpa angustifolia*, *Limeum viscosum*, *Lophiocarpus tenuissimus*.

5.2.3. Dwarsberg-Swartruggens Mountain Bushveld (SVcb 4)

Only approximately 28 ha of the Prospecting Right area is located in the Dwarsberg-Swartruggens Mountain Bushveld vegetation type.

The Dwarsberg-Swartruggens Mountain Bushveld occurs in the North-West Province, on hills and ridges east of the Lobatsi River through the Zeerust and the Swartruggens areas to Mabeskraal and the Selons River Valley in the east. Also occurs on the parallel ridges of the Dwarsberge from Witkleigat in the west to the hills of the Dwarsberg area in the east.

The vegetation type is characterised by rocky low to medium high hills and ridges with some steep faces in places. Height above the surrounding plains can reach about 300 m. Variable vegetation structure depending on slope, exposure, aspect and local habitat—various combinations of tree and shrub layers often with dense grass layer. Bush clumps also occur.

A list of expected common and dominant species in undisturbed vegetation includes the following (those with a "d" are considered to be dominant) (Mucina and Rutherford, 2006):

- **Tree:** *Vachellia robusta* (d), *Senegalia caffra* (d), *S. erubescens* (d), *Burkea africana* (d), *Combretum apiculatum* (d), *Faurea saligna* (d), *Protea caffra* (d), *Combretum imberbe*, *C. molle*, *Cussonia paniculata*, *C. transvaalensis*, *Dombeya rotundifolia*, *Ozoroa paniculosa*, *Pappea capensis*, *Peltophorum africanum*, *Spirostachys africana*, *Vangueria infausta*, *Ziziphus mucronata*, *Aloe marlothii* subsp. *marlothii* (d).
- **Shrubs:** *Dichrostachys cinerea* (d), *Croton pseudopulchellus*, *Ehretia rigida* subsp. *rigida*, *Grewia flava*, *Mundulea sericea*, *Tarchonanthus camphoratus*, *Vitex zeyheri*, *Athrixia elata*, *Pavonia burchellii*, *Searsia magalismsontana* subsp. *magalismsontana*, *S. rigida* var. *rigida*, *Asparagus africanus*.

- **Graminoids:** *Aristida canescens* (d), *Cenchrus ciliaris* (d), *Chrysopogon serrulatus* (d), *Digitaria eriantha* subsp. *eriantha* (d), *Enneapogon scoparius* (d), *Loudetia simplex* (d), *Schizachyrium sanguineum* (d), *Setaria lindenbergiana* (d), *Bewisia biflora*, *Bothriochloa insculpta*, *Cymbopogon caesius*, *C. pospischilii*, *Elionurus muticus*, *Eragrostis rigidior*, *Fingerhuthia africana*, *Heteropogon contortus*, *Melinis nerviglumis*, *Panicum maximum*, *Setaria sphacelata*, *Themeda triandra*, *Trachypogon spicatus*, *Tristachya biseriata*.
- **Herbs:** *Barleria macrostegia*, *Commelina africana*, *Hermannia depressa*, *Senecio venosus*. Geophytic Herbs: *Hypoxis hemerocallidea*, *Pellaea calomelanos*, *Tritonia nelsonii*.

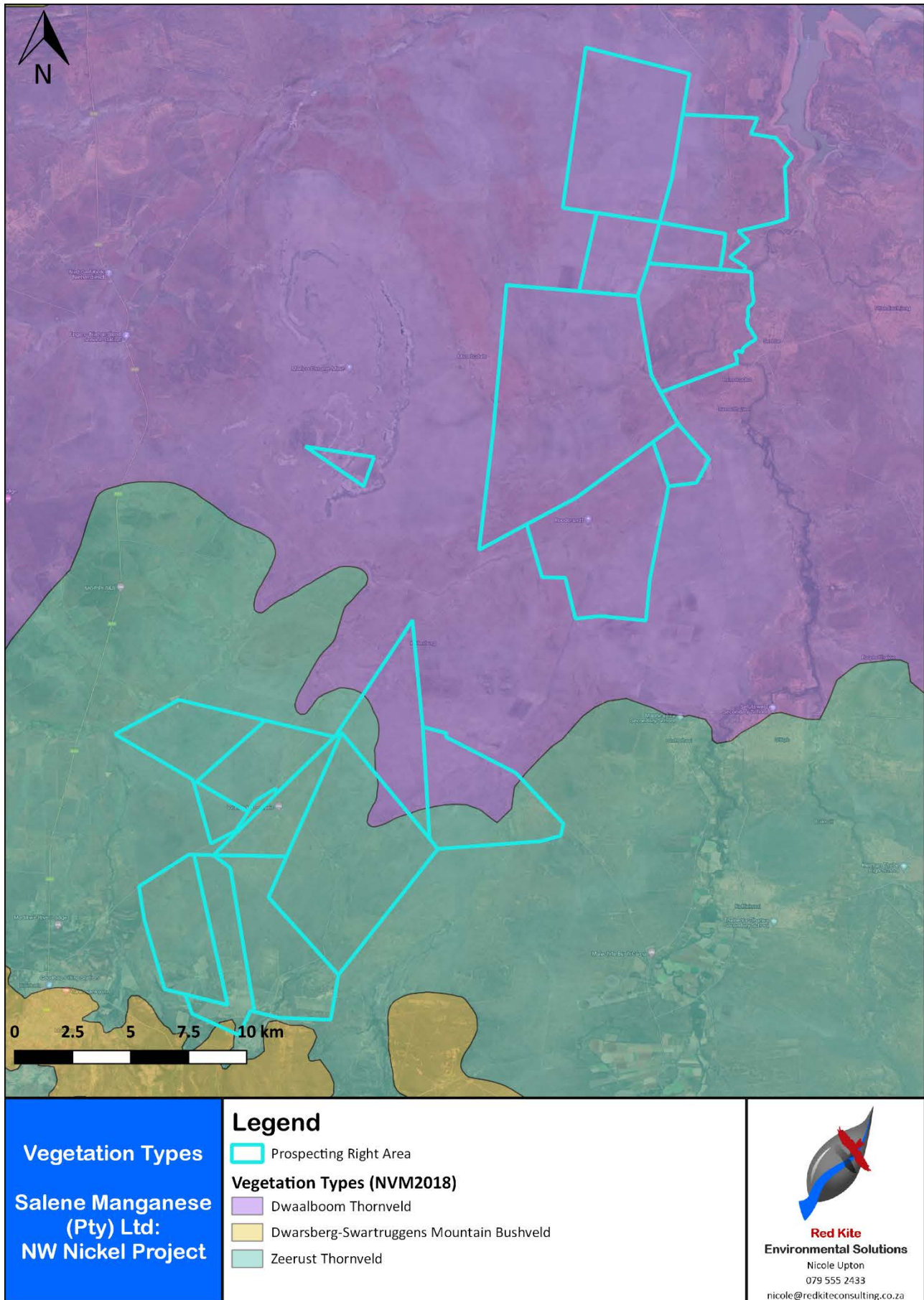


Figure 4: Vegetation types of the study site

5.3. Vegetation Conservation Status

The National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011), published under NEMBA (Section 3.1.1), lists national vegetation types that are afforded protection on the basis of rates of transformation. All three vegetation types occurring on the project area (Dwaalboom Thornveld, Zeerust Thornveld and Dwarsberg-Swartruggens Mountain Bushveld) are not listed in the “National List of Ecosystems that are Threatened and need of protection”, and as Least Concern by the 2018 National Biodiversity Assessment.

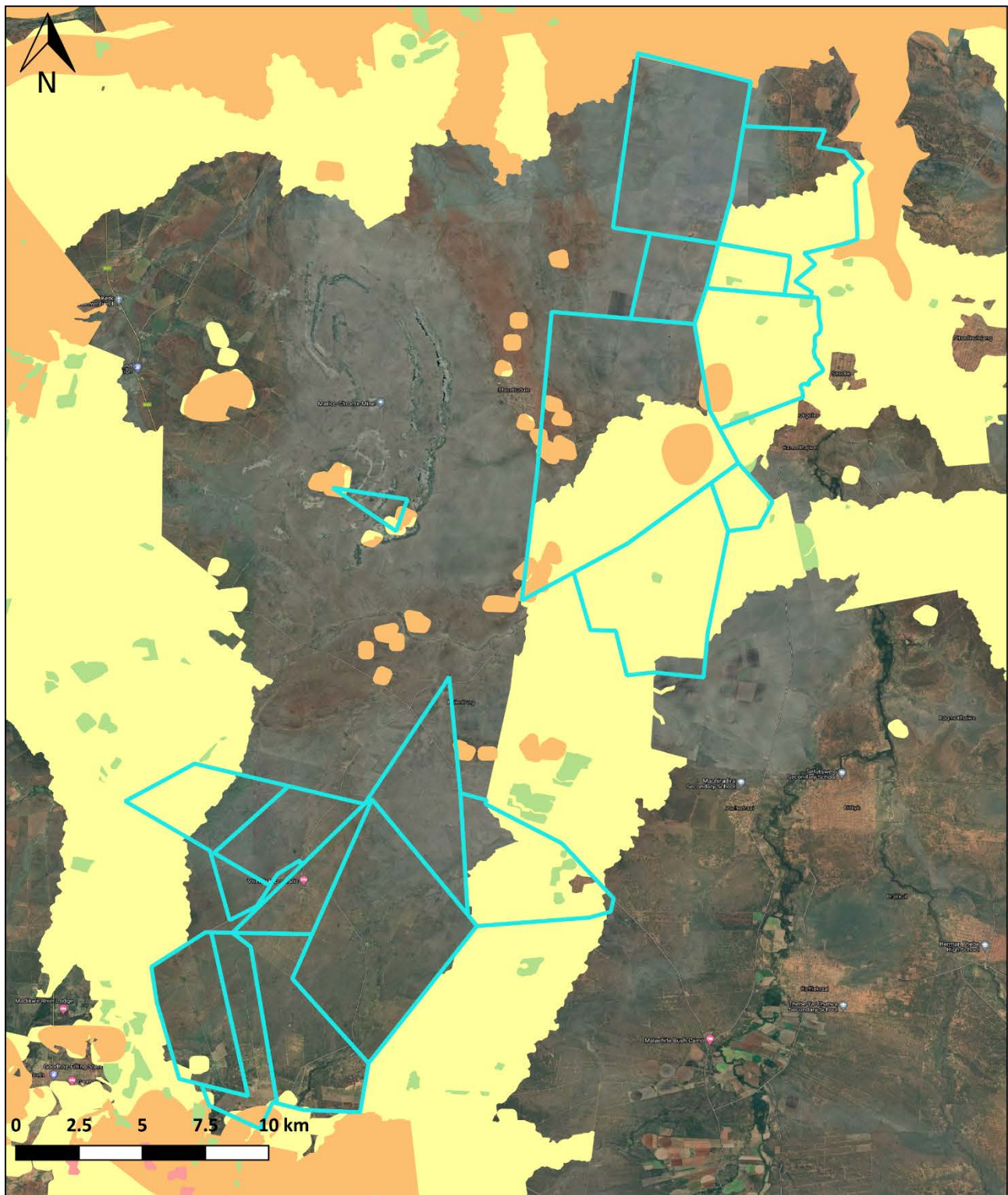
There is one main conservation management plan for the province, namely the North West Biodiversity Sector Plan (NW BSP). The purpose of a Biodiversity Sector Plan is to inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact on biodiversity.

The NW BSP comprises two spatial components: maps of critical biodiversity areas (CBAs); and a set of land-use guidelines that are important for maintaining and supporting the inherent biodiversity values of these critical biodiversity areas.

- **Critical Biodiversity Areas (1) (CBA1):** Irreplaceable Sites. Areas required to meet biodiversity pattern and/or ecological processes targets. No alternative Sites are Available to Meet targets. Maintain In a natural state with limited or no biodiversity loss. Rehabilitate degraded areas to a natural or near natural state, and manage for no further degradation.
- **Critical Biodiversity Area (2) (CBA2):** Best Design Selected Sites. Areas selected to meet biodiversity pattern and/or ecological process targets. Alternative sites may be available to meet targets. Maintain in a natural state with limited or no biodiversity loss. Maintain current agricultural activities. Ensure that land use is not intensified and that activities are managed to minimize impact on threatened species.
- **Ecological Support Areas (1) (ESA1):** Natural, Near natural and degraded areas supporting CBAs by maintaining Ecological processes. Maintain ecosystem functionality and connectivity allowing for limited loss of biodiversity pattern.
- **Ecological Support Areas (2) (ESA2):** Areas with no natural habitat that is important for supporting ecological processes. Avoid additional / new impacts on ecological processes.
- **Other Natural Areas (ONA):** Natural and intact but not required to meet targets, or identified as CBA or ESA. No management objectives, land management recommendations or land-use guidelines are prescribed.
- **No natural habitat remaining:** Areas with no significant direct biodiversity value. Not Natural or degraded natural areas that are not required as ESA, including intensive agriculture, urban, industry; and human infrastructure. No management objectives, land management recommendations or land-use guidelines are prescribed.

The study area contains the following classes from the NW BSP:

- CBA2: A few smaller, isolated CBA2 areas are located on the Prospecting Right area. These CBA2 areas on the project area appear to be largely associated with ridges and koppies and potential wetland features.
- ESA1: Larger, continuous ESA1 areas occur on the project area. The majority of the ESA1 areas are located on the eastern sections of the Prospecting Right area. These areas were most likely identified as ESA 1 areas due to their appearance as natural areas and their function as ecological corridors providing connectivity.
- ESA2: A few small, isolated ESA2 areas are located on the project footprint. These areas appear to be associated with vegetation previously disturbed by agricultural activities that fall within the ESA1 areas.









<p>NWBSP Biodiversity Areas</p> <p>Salene Manganese (Pty) Ltd: NW Nickel Project</p>	<p>Legend</p> <p> Prospecting Right Area</p> <p>Biodiversity Areas (NWBSP2015)</p> <p> CBA1</p> <p> CBA2</p> <p> ESA1</p> <p> ESA2</p>	 <p>Red Kite Environmental Solutions Nicole Upton 079 555 2433 nicole@redkiteconsulting.co.za</p>
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Figure 5: NWBSP Biodiversity areas on the project area

According to the South African Protected Areas Database (SAPAD) a number of Protected Areas, in terms of NEMPAA, are located within 10 km of the Prospecting Right area:

1. Madikwe Nature Reserve – 6 km north of PR area
2. Tweekoppiesfontein Private Nature Reserve – adjacent to western border of northern-most PR portion
3. Nellie Private Nature Reserve – 1 km west of PR area
4. Drie Annie Private Nature Reserve – adjacent to western-most portion of PR area
5. Koos Swart Private Nature Reserve – 4 km west of PR area
6. Thys Snyman Private Nature Reserve – 6 km west of PR area
7. Hillendale Private Nature Reserve – 8 km south of PR area

The NW/Gauteng Bushveld NPAES area is located on portions of the northern sections of the Prospecting Right area.

No other conservation areas are located on the project area or within 10 km of the project area.








<p>Protected and Conservation Areas</p> <p>Salene Manganese (Pty) Ltd: NW Nickel Project</p>	Legend	
	<p> Prospecting Right Area</p> <p> Conservation Areas (SACAD)</p>	<p> Protected Areas (SAPAD)</p> <p> NPAES areas</p>
		 <p>Red Kite Environmental Solutions Nicole Upton 079 555 2433 nicole@redkiteconsulting.co.za</p>

Figure 6: Protected and conservation areas

5.4. POSA Plant Species

Information on plant species previously recorded for the project area was extracted from the POSA online database hosted by SANBI. A list of plant species that have previously been recorded in the project area is provided in Appendix C. The results indicate that 90 plant species have been recorded in the area queried, consisting of 36 families.

Of the 90 species previously recorded for the area, two are Species of Conservation Concern (SCC) in terms of their Red List status. One additional flora species was listed for the project area in the Environmental Screening Tool Report.

The table below list the flora SCC previously recorded for the greater area along with the likelihood of the species occurring on the project footprint. It is important to note that the specialist has taken a conservative approach regarding the likelihood of occurrence as the assessment is based on desktop findings and does not include a site survey.

Table 1: Flora SCC recorded for the area on POSA

Species	Conservation	Likelihood of occurrence
Sensitive species 695	Red List Status: EN	Plants remain at two to five locations within a restricted area (1277 km ²). Occurs in the Marico district north of Zeerust in the Dwarsberg-Swartruggens Mountain Bushveld. This species is found in woodland and thornveld, wedged among large rocks on the slopes of quartzitic ridges, at altitudes of 1000-1200 m. This species is considered to have a low likelihood of occurrence on the project footprint.
<i>Ceropegia insignis</i>	Red List Status: EN	A range-restricted species (164 km ²), occurring at two to three locations. Occurs in northern North West province and adjacent areas in Limpopo between Ramotswa and Dwaalboom, in Dwaalboom Thornveld. This species occurs on stony slopes and sandy soils in grassland and open savanna. Based on the distribution of the species provided by the SANBI Red List of South African Plants, tis species is considered to have a low likelihood of occurrence on the project footprint.
<i>Searsia maricoana</i>	Red List Status: VU	Known from three locations in the Zeerust District. Occurs in Dwaalboom Thornveld, Carletonville Dolomite Grassland, and Klerksdorp Thornveld. This species is found in grassland, at the transition from bushveld, in dark soil among igneous rocks. This species is considered to have a low likelihood of occurrence on the project footprint.

Two of the flora species recorded on POSA for the area are listed as protected in the NWBMA:

- *Ceropegia insignis*
- *Euphorbia inaequilatera*

Two protected tree species, in terms of the NFA, have been recorded on POSA for the area queried, namely:

- *Boscia albitrunca* (Shepherd's tree)
- *Sclerocarya birrea* (Marula)

Seven of the flora species recorded on POSA for the area are known to have medicinal uses:

- *Convolvulus sagittatus*
- *Diospyros lycioides*
- *Dombeya rotundifolia*
- *Euclea undulata*
- *Senegalia caffra*
- *Vachellia karroo*
- *Ziziphus mucronata*

One exotic plant species were recorded to occur within the area queried, namely *Bidens bipinnata* (Black jack).

Five endemic plant species were recorded to occur within the area queried:

- *Blepharis innocua*
- *Indigofera glaucescens*
- *Indigofera leendertziae*
- *Lotononis burchellii*
- *Triumfetta sonderi*

6. FAUNA

A desktop study was conducted to establish whether any potentially sensitive faunal species or species of conservation concern (SCC) may possibly occur on site. The Virtual Museum and Animal Demography Unit (ADU) was used to compile species lists based on the sightings and data gathered from the South African Biodiversity Institute for the 2436CD, 2526AA, 2526AB, 2526AC and 2526AD Quarter Degree Squares (QDS). The avifaunal species list was obtained from SABAP2 for the pentads applicable to the project area.

It is important to note that a QDS covers a large area: $\pm 27 \times 25 \text{ km}$ ($\pm 693 \text{ km}^2$) and a pentad (SABAP2 Protocol) an area of $\pm 8 \times 7.6 \text{ km}$ ($\pm 60.8 \text{ km}^2$) and it is possible that suitable habitat will exist for a certain Red Data avifaunal species within this wider area surrounding the study site. However, the specific habitat(s) found on site may not suit Red Data species, even though it has been recorded for the QDS or pentad.

Species and habitat were identified as possibly sensitive within the framework of this study. Sensitive species were determined according to their close relationship and dependence on the vegetation type and habitat found to occur on the project site.

Appendix D list the faunal species for the five QDS applicable to the project. National SCC include mammalian and avifaunal species which are known to occur in the regional area where the project is proposed (Table 2). Provincially protected species could also be expected to occur in the region and are shown below and within the appendices.

Table 2: Fauna SCC found in QDS that may be relevant to the Salene Manganese PR

Scientific Name	Common Name	Conservation Concern
Mammals		
Possible occurrence		
<i>Damaliscus lunatus lunatus</i>	(Southern African) Tsessebe	Vulnerable (2016), TOPS
<i>Smutsia temminckii</i>	Ground Pangolin	Vulnerable (2016), TOPS
<i>Otomys auratus</i>	Southern African Vlei Rat	Near Threatened (2016)
<i>Aonyx capensis</i>	African Clawless Otter	Near Threatened (2016), NWBA Schedule 2 & 5
<i>Crocidura mariquensis</i>	Swamp Musk Shrew	Near Threatened (2016), NWBA Schedule 2
<i>Pipistrellus (Pipistrellus) rusticus</i>	Rusty Pipistrelle	Near Threatened
<i>Hippotragus equinus</i>	Roan Antelope	Endangered (2016), TOPS
<i>Hippotragus niger niger</i>	Sable	Vulnerable (2016), NWBA Schedule 2
<i>Kobus leche</i>	Lechwe	Near Threatened (2017)
<i>Pelea capreolus</i>	Vaal Rhebok	Near Threatened (2016), NWBA Schedule 2 & 5
Not likely to occur		
<i>Leptailurus serval</i>	Serval	Near Threatened (2016), TOPS
<i>Panthera leo</i>	Lion	Least Concern (2016) – Listed large predator, TOPS
<i>Panthera pardus</i>	Leopard	Vulnerable (2016) – Listed large predator, TOPS
<i>Hippopotamus amphibius</i>	Common Hippopotamus	Least Concern (2016), NWBA Schedule 2 & 5, Flagged by Screening Tool Report
<i>Crocuta crocuta</i>	Spotted Hyaena	Near Threatened (2016) – Listed large predator, TOPS
<i>Hyaena brunnea</i>	Brown Hyena	Near Threatened (2015), TOPS
<i>Lycaon pictus</i>	African wild dog	Endangered (2016) – Listed large predator (NWBA), TOPS, Flagged by Screening Tool Report
<i>Loxodonta africana</i>	African Bush Elephant	Vulnerable A2a (2008), TOPS

Scientific Name	Common Name	Conservation Concern	
<i>Acinonyx jubatus</i>	Cheetah	Vulnerable (2016) – Listed large predator, TOPS, Flagged by Screening Tool Report	
Avifauna		Regional Status	Global Status
<i>Polemaetus bellicosus</i>	Eagle, Martial	EN, NWBA Schedule 2, TOPS	VU (EN 2021)
<i>Falco biarmicus</i>	Falcon, Lanner	VU, NWBA Schedule 2	LC
<i>Phoenicopterus roseus</i>	Flamingo, Greater	NT, NWBA Schedule 2	LC
<i>Certhilauda chuana</i>	Lark, Short-clawed	NT, NWBA Schedule 2	LC
<i>Coracias garrulus</i>	Roller, European	NT, NWBA Schedule 2	LC
<i>Pterocles gutturalis</i>	Sandgrouse, Yellow-throated	NT, NWBA Schedule 2	LC
<i>Sagittarius serpentarius</i>	Secretarybird	VU, NWBA Schedule 2 – Flagged by Screening Tool Report	VU
<i>Ciconia abdimii</i>	Stork, Abdim's	NT, NWBA Schedule 2	LC
<i>Mycteria ibis</i>	Stork, Yellow-billed	EN, NWBA Schedule 2	LC
<i>Torgos tracheliotos</i>	Vulture, Lappet-faced	EN, NWBA Schedule 2, TOPS	EN
<i>Gyps africanus</i>	Vulture, White-backed	CR, NWBA Schedule 2, TOPS	CR

6.1.1. Mammals

Ninety-four (94) mammal species were found to possibly occur within the QDS, of which many are provincial SCC. Eighteen (18) species are SCC in a national context. The other species, largely game species, have a provincially protected status, which regulates handling of these species, and may be viewed in Appendix D.

Those species with a high likelihood of occurrence include the following:

- *Damaliscus lunatus lunatus* (Southern African Tsessebe) - VU (2016), TOPS
- *Hippotragus equinus* (Roan Antelope) - EN (2016), TOPS
- *Hippotragus niger niger* (Sable) - VU (2016), NWBA Schedule 2
- *Kobus leche* (Lechwe) - NT (2017)
- *Pelea capreolus* (Vaal Rhebok) - NT (2016), NWBA Schedule 2 & 5
- *Leptailurus serval* (Serval) - NT (2016), TOPS
- *Smutsia temminckii* (Ground Pangolin) - VU (2016), TOPS
- *Otomys auratus* (Southern African Vlei Rat) - NT (2016)
- *Aonyx capensis* (African Clawless Otter) - NT (2016), NWBA Schedule 2 & 5
- *Crocidura mariquensis* (Swamp Musk Shrew) - NT (2016), NWBA Schedule 2
- *Pipistrellus rusticus* (Rusty Pipistrelle) - NT

The following SCC species listed for the QDS are **unlikely or have a low likelihood of occurrence** on the project site due to anthropogenic movement and activities in the area:

- *Lycaon pictus* (African wild dog) - EN (2016), Listed large predator (NWBA), TOPS, Flagged by Screening Tool Report
- *Loxodonta Africana* (African Bush Elephant) - VU A2a (2008), TOPS
- *Acinonyx jubatus* (Cheetah) - VU (2016), Listed large predator, TOPS, Screening Tool Report
- *Panthera pardus* (Leopard) - VU (2016), Listed large predator, TOPS
- *Crocuta Crocuta* (Spotted Hyaena) - NT (2016), Listed large predator, TOPS

- *Hyaena brunnea* (Brown Hyena) - NT (2015), TOPS
- *Panthera leo* (Lion) - LC (2016) – Listed large predator, TOPS
- *Hippopotamus amphibius* (Common Hippopotamus) LC (2016), NWBA Schedule 2 & 5, Screening Tool Report

6.1.2. Avifaunal

According to data collected during the Southern African Bird Atlas Project 2 (SABAP2) <http://sabap2.adu.org.za>, the site is located within several pentads of which the following nineteen (19) pentads overlap with the prospecting right: 2450_2615, 2450_2620, 2455_2615, 2455_2620, 2500_2610, 2500_2615, 2500_2620, 2505_2610, 2505_2615, 2505_2620, 2510_2610, 2510_2615, 2510_2620, 2515_2605, 2515_2610, 2515_2615, 2515_2620, 2520_2610 and 2520_2615.

Two hundred and seventy-four (274) bird species are listed for the pentads associated with the project area.

Eleven (11) avifaunal SCC have been indicated for the specific pentad and listed in the Screening Tool Report relevant to the development:

- Eagle, Martial (*Polemaetus bellicosus*) - EN, NWBA Schedule 2, TOPS (Regional), VU (EN 2021) (Global)
- Falcon, Lanner (*Falco biarmicus*) - VU, NWBA Schedule 2 (Regional), LC (Global)
- Flamingo, Greater (*Phoenicopterus roseus*) - NT, NWBA Schedule 2 (Regional), LC (Global)
- Lark, Short-clawed (*Certhilauda chuana*) - NT, NWBA Schedule 2 (Regional), LC (Global)
- Roller, European (*Coracias garrulus*) - NT, NWBA Schedule 2 (Regional), LC (Global)
- Sandgrouse, Yellow-throated (*Pterocles gutturalis*) - NT, NWBA Schedule 2 (Regional), LC (Global)
- Secretarybird (*Sagittarius serpentarius*) - VU, NWBA Schedule 2 – Flagged by Screening Tool Report (Regional), VU (Global)
- Stork, Abdim's (*Ciconia abdimii*) - NT, NWBA Schedule 2 (Regional), LC (Global)
- Stork, Yellow-billed (*Mycteria ibis*) - EN, NWBA Schedule 2 (Regional), LC (Global)
- Vulture, Lappet-faced (*Torgos tracheliotos*) - EN, NWBA Schedule 2, TOPS (Regional), EN (Global)
- Vulture, White-backed (*Gyps africanus*) - CR, NWBA Schedule 2, TOPS (Regional), CR (Global)

The closest Important Birding Areas are located more than 50 km from the project area.

6.1.3. Butterflies

Seventy-six (76) butterfly species were found for the 2436CD, 2526AA, 2526AB, 2526AC and 2526AD QDS, none of which are categorised as SCC in terms of their national status.

However, all Charaxes butterflies are provincially protected:

- *Charaxes achaemenes Achaemenes* (Bushveld charaxes) - LC (SABCA 2013), NWBA Schedule 2
- *Charaxes jahlusa rex* (Pearl-spotted charaxes) - LC (SABCA 2013), NWBA Schedule 2
- *Charaxes saturnus saturnus* (Foxy charaxes) - LC (SABCA 2013), NWBA Schedule 2
- *Charaxes vansonii* (Van Son's charaxes) - LC (SABCA 2013), NWBA Schedule 2

6.1.4. Other Invertebrates

Nine Lacewing species, 24 Dung beetles and four Odonata were listed for the QDS, none of which are listed as SCC on the IUCN Red list. None of these species have a national Red List SCC status, however, all Dung beetle species are provincially protected.

6.1.5. Reptiles

Thirty-six (36) reptile species were recorded for the QDS. None of the species are categorised as SCC in terms of the national Red List. Several others enjoy provincial protection:

- Sensitive Species 12 - LC (SARCA 2014), NWBA Schedule 2, Flagged by Screening Tool Report
- *Chamaeleo dilepis* (Common Flap-neck Chameleon) - LC (SARCA 2014), NWBA Schedule 2
- *Telescopus semiannulatus semiannulatus* (Eastern Tiger Snake) - LC (SARCA 2014), NWBA Schedule 2
- *Cordylus jonesii* (Jones' Girdled Lizard) - LC (SARCA 2014), NWBA Schedule 2
- *Cordylus vittifer* (Common Girdled Lizard) - LC (SARCA 2014), NWBA Schedule 2
- *Gerrhosaurus flavigularis* (Yellow-throated Plated Lizard) - LC (SARCA 2014), NWBA Schedule 2
- *Varanus albigularis albigularis* (Rock Monitor) - LC (SARCA 2014), NWBA Schedule 2
- *Varanus niloticus* (Water Monitor) - LC (SARCA 2014), NWBA Schedule 2

6.1.6. Amphibians

Twenty (20) amphibian species were listed within the QDS, none of which are Red List SCC.

7. SENSITIVITY

The project area is located on three vegetation types, namely Dwaalboom Thornveld (SVcb 1), Zeerust Thornveld (SVcb 3) and Dwarsberg-Swartruggens Mountain Bushveld (SVcb 4). All three vegetation types occurring on the project area are not listed in the “National List of Ecosystems that are Threatened and need of protection”, and as Least Concern by the 2018 National Biodiversity Assessment.

The study area contains the following classes from the NWBSP:

- CBA2: A few smaller, isolated CBA2 areas are located on the Prospecting Right area. These CBA2 areas on the project area appear to be largely associated with ridges and koppies and potential wetland features.
- ESA1: Larger, continuous ESA1 areas occur on the project area. The majority of the ESA1 areas are located on the eastern sections of the Prospecting Right area. These areas were most likely identified as ESA 1 areas due to their appearance as natural areas and their function as ecological corridors providing connectivity.
- ESA2: A few small, isolated ESA2 areas are located on the project footprint. These areas appear to be associated with vegetation previously disturbed by agricultural activities that fall within the ESA1 areas.

According to the South African Protected Areas Database (SAPAD) a number of Protected Areas, in terms of NEMPAA, are located within 10 km of the Prospecting Right area:

1. Madikwe Nature Reserve – 6 km north of PR area
2. Tweekoppiesfontein Private Nature Reserve – adjacent to western border of northern-most PR portion
3. Nellie Private Nature Reserve – 1 km west of PR area
4. Drie Annie Private Nature Reserve – adjacent to western-most portion of PR area
5. Koos Swart Private Nature Reserve – 4 km west of PR area
6. Thys Snyman Private Nature Reserve – 6 km west of PR area
7. Hillendale Private Nature Reserve – 8 km south of PR area

The NW/Gauteng Bushveld NPAES area is located on the sections of the northern sections of the Prospecting Right area.

Various perennial and non-perennial rivers and streams flow across the Prospecting Right area. The most notable are:

- The Sehubyane River and its tributary, the Sandsloot River, flow through the southern section of the Prospecting Right area.
- The Madikwene River flows along the eastern border of the northern section of the Prospecting Right area.
- The Sehubyane River and Madikwe River confluence to form the Marico River, which flows in proximity to the eastern border of the northern section of the Prospecting Right area

Rivers and streams serve as ecological corridors, enable site and landscape level connectivity, and support ecological processes and are therefore considered to be of high ecological sensitivity.

The Prospecting Right area is located in a Freshwater Ecosystem Priority Area (FEPA), Phase 2 FEPA and Upstream FEPA.

Although some flora SCC were previously recorded for the area queried, all are considered to have a low likelihood of occurrence on the project area (refer to Table 1).

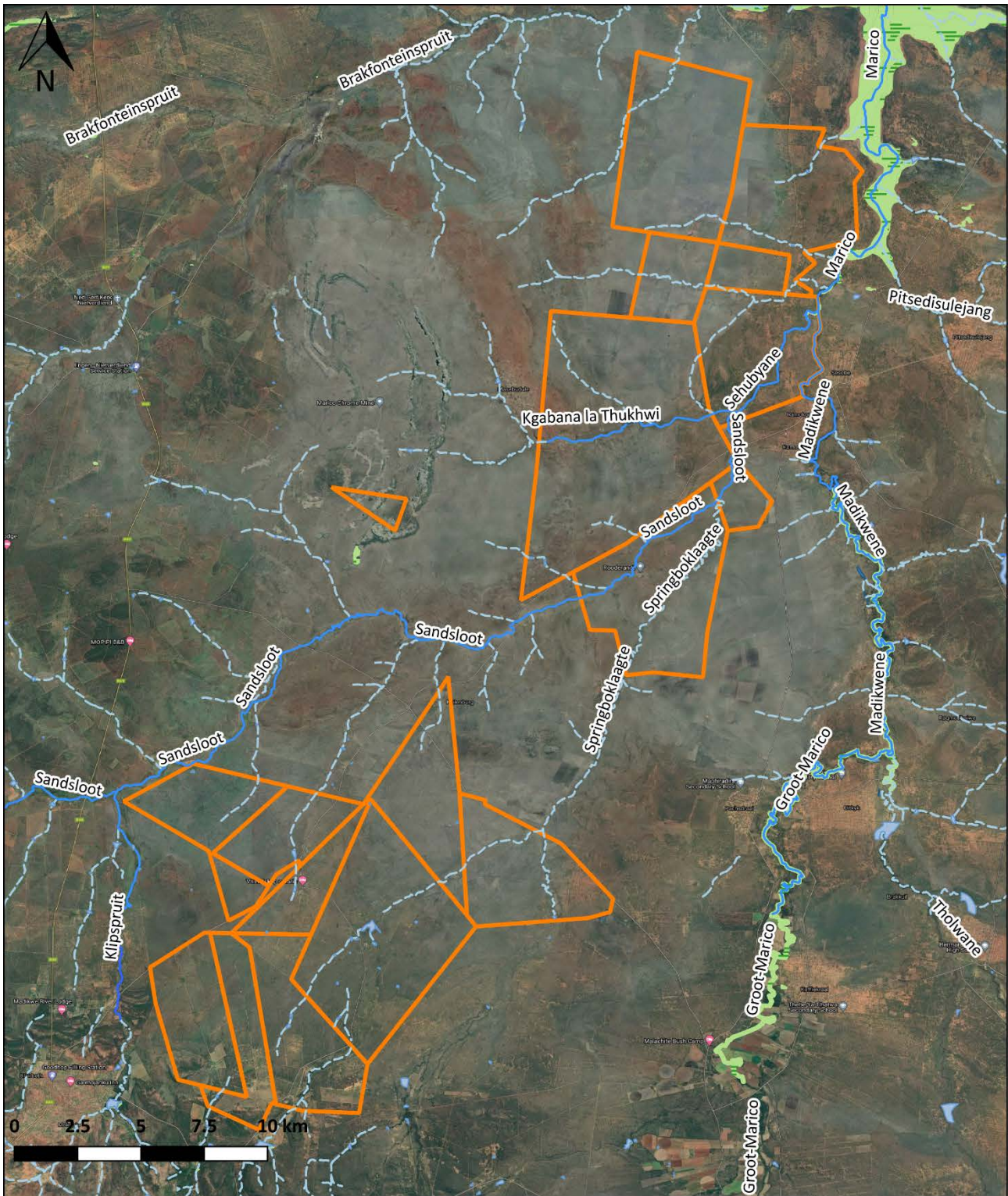
A number of mammalian and avifaunal SCC may potentially occur on the project site (refer to Table 2 and Table 3).

From satellite imagery of the project area the following impacts are apparent:

- A number of formal and informal roads are located across the Prospecting Right area. Impacts from human and vehicle movement on these roads are expected.

- Mining activities have taken place or are currently taking place in the western-most portion of the Prospecting Right area.
- Current and historic agricultural activities, including crop farming and grazing.

Based on the desktop assessment findings, the specialist concurs with the sensitivity as presented on the National Web-based Environmental Screening Tool, with the inclusion of all rivers and stream as high sensitivity.



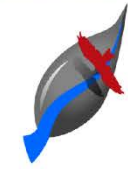
<p>Surface Water Features</p> <p>Salene Manganese (Pty) Ltd: NW Nickel Project</p>	<p>Legend</p>	 <p>Red Kite Environmental Solutions Nicole Upton 079 555 2433 nicole@redkiteconsulting.co.za</p>
	<p> Prospecting Right Area</p> <p>Rivers / streams</p> <p> Non-perennial</p> <p> Perennial</p> <p> Dam</p> <p> Wetlands (NFEPA database)</p>	

Figure 7: Rivers and stream in relation to the project site

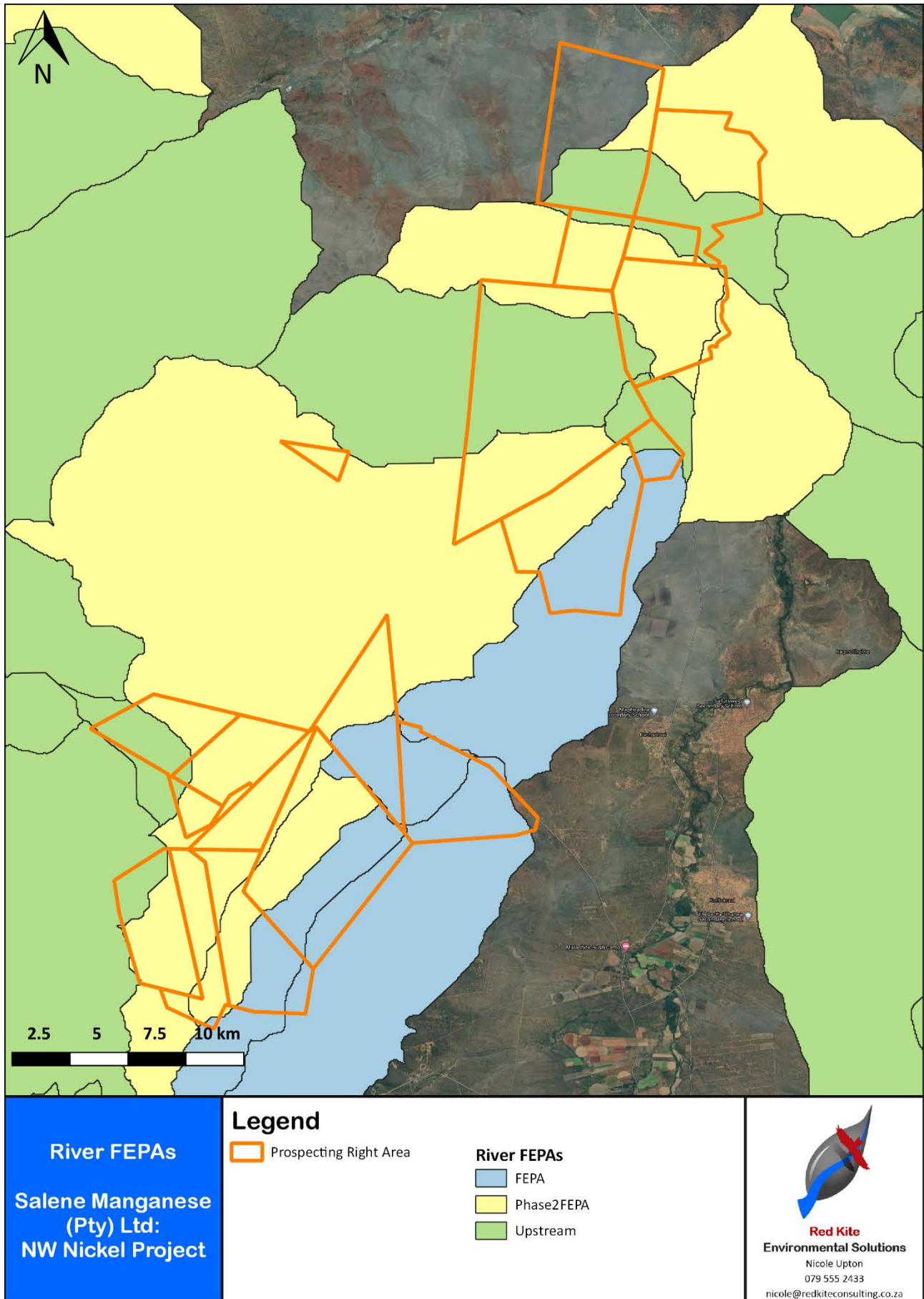


Figure 8: River FEPAs of the project area

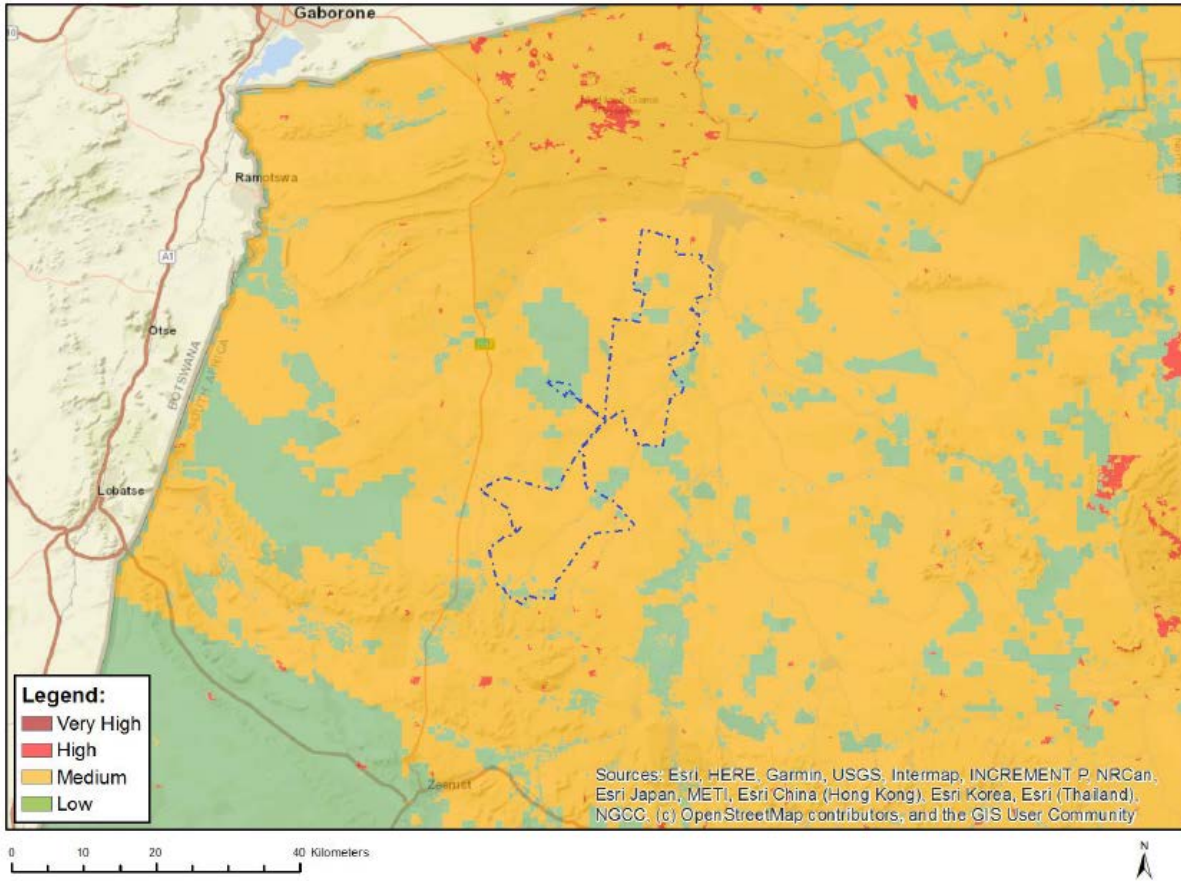


Figure 9: Environmental Screening Tool map of animal species theme sensitivity

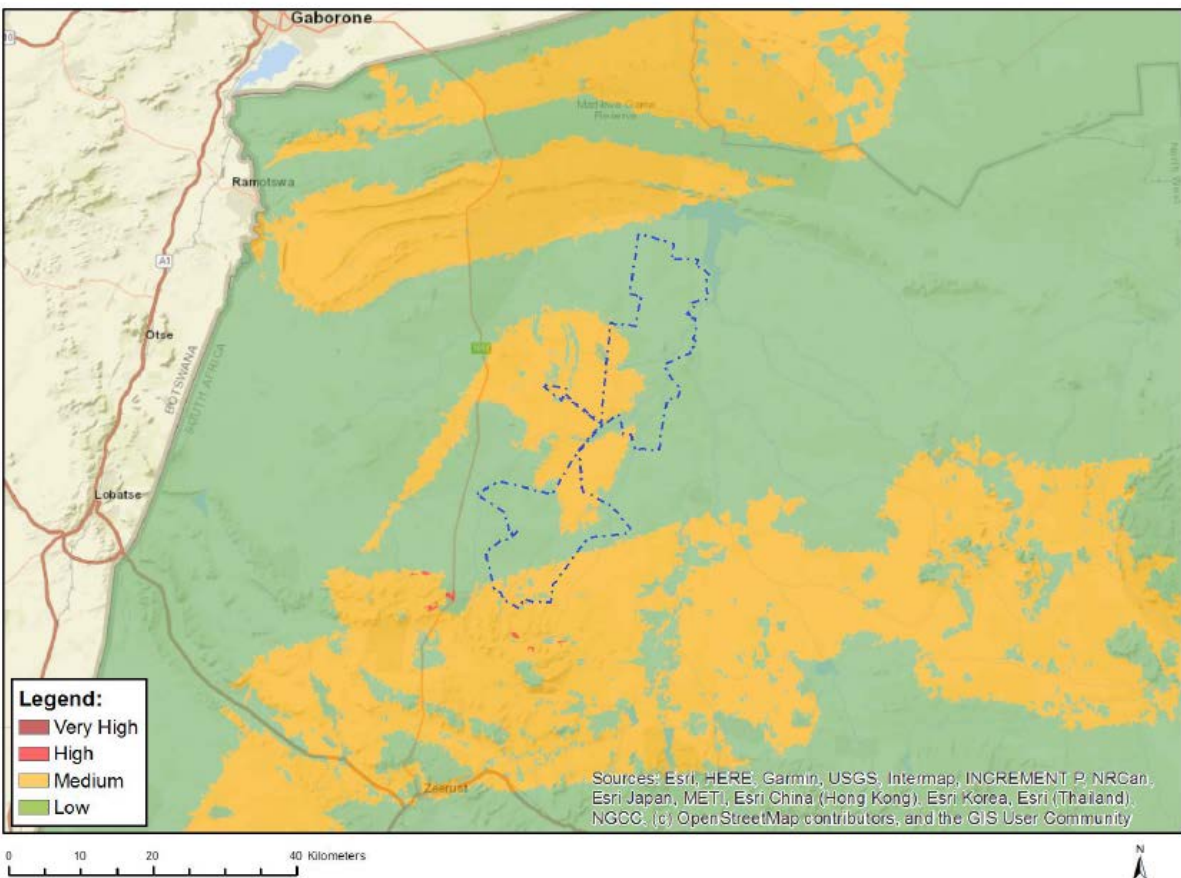


Figure 10: Environmental Screening Tool map of plant species theme sensitivity

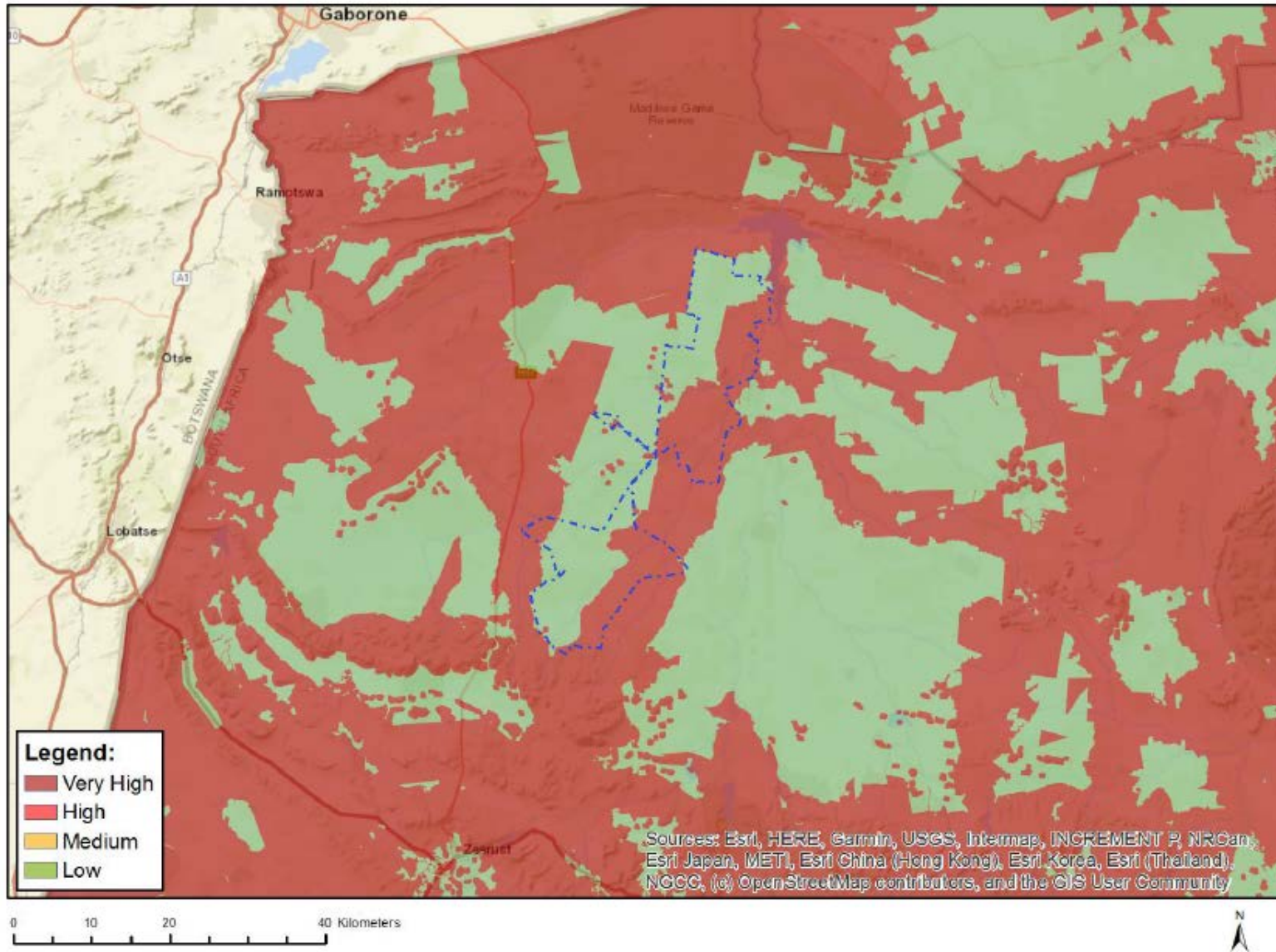


Figure 11: Environmental Screening Tool map of terrestrial biodiversity theme sensitivity

8. IMPACT ASSESSMENT

All forms of development, albeit for mining, industrial, urban or residential purposes, will have an immediate effect on the natural environment. It is therefore of utmost importance to provide information on the environmental consequences these activities will have and to inform the decision-makers thereof.

8.1. Methodology

8.1.1. Assessment Criteria

The criteria for the description and assessment of environmental impacts were drawn from the EIA Guidelines, National Environmental Management Act (Act No. 107 of 1998): EIA Regulations (2014) and as amended from time to time.

The level of detail as depicted in the EIA Guidelines was fine-tuned by assigning specific values to each impact. In order to establish a coherent framework within which all impacts could be objectively assessed, it was necessary to establish a rating system, which was applied consistently to all the criteria. For such purposes each aspect was assigned a value, ranging from one (1) to five (5), depending on its definition. This assessment is a relative evaluation within the context of all the activities and the other impacts within the framework of the project.

An explanation of the impact assessment criteria is defined below.

Table 3: Impact Assessment Criteria

EXTENT	
Classification of the physical and spatial scale of the impact	
Footprint	The impacted area extends only as far as the activity, such as footprint occurring within the total site area.
Site	The impact could affect the whole, or a significant portion of the site.
Regional	The impact could affect the area including the neighbouring farms, the transport routes and the adjoining towns.
National	The impact could have an effect that expands throughout the country (South Africa).
International	Where the impact has international ramifications that extend beyond the boundaries of South Africa.
DURATION	
The lifetime of the impact that is measured in relation to the lifetime of the proposed development.	
Short term	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than that of the construction phase.
Short to Medium term	The impact will be relevant through to the end of a construction phase (1.5 years).
Medium term	The impact will last up to the end of the development phases, where after it will be entirely negated.
Long term	The impact will continue or last for the entire operational lifetime i.e. exceed 30 years of the development, but will be mitigated by direct human action or by natural processes thereafter.
Permanent	This is the only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.
INTENSITY	
The intensity of the impact is considered by examining whether the impact is destructive or benign, whether it destroys the impacted environment, alters its functioning, or slightly alters the environment itself. The intensity is rated as	

Low	The impact alters the affected environment in such a way that the natural processes or functions are not affected.
Medium	The affected environment is altered, but functions and processes continue, albeit in a modified way.
High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.
PROBABILITY	
This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The classes are rated as follows:	
Improbable	The possibility of the impact occurring is none, due either to the circumstances, design or experience. The chance of this impact occurring is zero (0 %).
Possible	The possibility of the impact occurring is very low, due either to the circumstances, design or experience. The chances of this impact occurring is defined as 25 %.
Likely	There is a possibility that the impact will occur to the extent that provisions must therefore be made. The chances of this impact occurring is defined as 50 %.
Highly Likely	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up before carrying out the activity. The chances of this impact occurring is defined as 75 %.
Definite	The impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied on. The chance of this impact occurring is defined as 100 %.

The status of the impacts and degree of confidence with respect to the assessment of the significance must be stated as follows:

- **Status of the impact:** A description as to whether the impact would be positive (a benefit), negative (a cost), or neutral.
- **Degree of confidence in predictions:** The degree of confidence in the predictions, based on the availability of information and specialist knowledge.

Other aspects to take into consideration in the specialist studies are:

- Impacts should be described both before and after the proposed mitigation and management measures have been implemented.
- All impacts should be evaluated for the full-lifecycle of the proposed development, including construction, operation and decommissioning.
- The impact evaluation should take into consideration the cumulative effects associated with this and other facilities which are either developed or in the process of being developed in the region.
- The specialist studies must attempt to quantify the magnitude of potential impacts (direct and cumulative effects) and outline the rationale used. Where appropriate, national standards are to be used as a measure of the level of impact.

8.1.2. Mitigation

The impacts that are generated by the development can be minimised if measures are implemented in order to reduce the impacts. The mitigation measures ensure that the development considers the environment and the predicted impacts in order to minimise impacts and achieve sustainable development.

8.1.2.1. Determination of Significance-Without Mitigation

Significance is determined through a synthesis of impact characteristics as described in the above paragraphs. It provides an indication of the importance of the impact in terms of both tangible and intangible characteristics. The significance of the impact “without mitigation” is the prime determinant of the nature and degree of mitigation required. Where the impact is positive, significance is noted as “positive”. Significance is rated on the following scale:

Table 4: Significance-Without Mitigation

NO SIGNIFICANCE	The impact is not substantial and does not require any mitigation action.
LOW	The impact is of little importance, but may require limited mitigation.
MEDIUM	The impact is of importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
HIGH	The impact is of major importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

8.1.2.2. Determination of Significance- With Mitigation

Determination of significance refers to the foreseeable significance of the impact after the successful implementation of the necessary mitigation measures. Significance with mitigation is rated on the following scale:

Table 5: Significance- With Mitigation

NO SIGNIFICANCE	The impact will be mitigated to the point where it is regarded as insubstantial.
LOW	The impact will be mitigated to the point where it is of limited importance.
LOW TO MEDIUM	The impact is of importance, however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable levels.
MEDIUM	Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw.
MEDIUM TO HIGH	The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.
HIGH	The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.

8.1.3. Assessment Weighting

Each aspect within an impact description was assigned a series of quantitative criteria. Such criteria are likely to differ during the different stages of the project's life cycle. In order to establish a defined base upon which it becomes feasible to make an informed decision, it was necessary to weigh and rank all the criteria.

8.1.3.1. Ranking, Weighting and Scaling

For each impact under scrutiny, a scaled weighting factor is attached to each respective impact (refer Table 7). The purpose of assigning weights serves to highlight those aspects considered the most critical to the various stakeholders and ensure that each specialist's element of bias is taken into account. The weighting factor also provides a means whereby the impact assessor can successfully deal with the complexities that exist between the different impacts and associated aspect criteria.

Simply, such a weighting factor is indicative of the importance of the impact in terms of the potential effect that it could have on the surrounding environment. Therefore, the aspects considered to have a relatively high value will score a relatively higher weighting than that which is of lower importance.

Table 6: Description of assessment parameters with its respective weighting

EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR (WF)		SIGNIFICANCE RATING (SR)	
Footprint	1	Short term	1	Low	1	Probable	1	Low	1	Low	0-19
Site	2	Short to Medium	2			Possible	2	Low to Medium	2	Low to Medium	20-39
Regional	3	Medium term	3	Medium	3	Likely	3	Medium	3	Medium	40-59
National	4	Long term	4			Highly Likely	4	Medium to High	4	Medium to High	60-79
International	5	Permanent	5	High	5	Definite	5	High	5	High	80-100
MITIGATION EFFICIENCY (ME)						SIGNIFICANCE FOLLOWING MITIGATION (SFM)					
High		0.2		Low		0 - 19					
Medium to High		0.4		Low to Medium		20 - 39					
Medium		0.6		Medium		40 - 59					
Low to Medium		0.8		Medium to High		60 - 79					
Low		1.0		High		80 - 100					

8.1.3.2. Identifying the Potential Impacts Without Mitigation Measures (WOM)

Following the assignment of the necessary weights to the respective aspects, criteria are summed and multiplied by their assigned weightings, resulting in a value for each impact (prior to the implementation of mitigation measures).

Equation 1:

$$\text{Significance Rating (WOM)} = (\text{Extent} + \text{Intensity} + \text{Duration} + \text{Probability}) \times \text{Weighting Factor}$$

8.1.3.3. Identifying the Potential Impacts with Mitigation Measures (WM)

In order to gain a comprehensive understanding of the overall significance of the impact, after implementation of the mitigation measures, it was necessary to re-evaluate the impact.

8.1.3.4. Mitigation Efficiency (ME)

The most effective means of deriving a quantitative value of mitigated impacts is to assign each significance rating value (WOM) a mitigation efficiency (ME) rating (refer to Table 7). The allocation of such a rating is a measure of the efficiency and effectiveness, as identified through professional experience and empirical evidence of how effectively the proposed mitigation measures will manage the impact.

Thus, the lower the assigned value the greater the effectiveness of the proposed mitigation measures and subsequently, the lower the impacts with mitigation.

Equation 2:

$$\text{Significance Rating (WM)} = \text{Significance Rating (WOM)} \times \text{Mitigation Efficiency}$$

or $WM = WOM \times ME$

8.1.3.5. Significance Following Mitigation (SFM)

The significance of the impact after the mitigation measures are taken into consideration. The efficiency of the mitigation measure determines the significance of the impact. The level of impact is therefore seen in its entirety with all considerations taken into account.

8.2. Nature of Impact Identified

The following section focuses on the potential impacts that the proposed activity and associated activities may have on the terrestrial ecology of the area. Potential impacts, as a result of the proposed activities, will be investigated for two phases of the project: operational phase and closure / decommissioning phase. As the project only proposes to undertake drilling as part of the invasive activities, no construction phase is expected.

No layout was provided to the specialist for this project as the number and location of drill holes will be determined as part of the data gathering to be undertaken for the prospecting, as such the impacts described below and their ratings are based on broad generalisations.

- Most of the impacts on plant species will occur during the operational phase when removal of plant communities will take place on site, which will also impact on the animals that use the area.
- The operational activities may result in impacts to the natural environment due to increased traffic and personnel to the area. Heavy machinery and vehicles will result in compaction of the soil and removal of vegetation and topsoil.
- Impacts to sensitive areas and specialised niche habitats, such as koppies, ridges and rivers and streams may occur as a result of the proposed project.
- Vegetation clearance will likely destroy habitats and lead to possible invasive and / or exotic species establishing in the area and edge-effects occurring surrounding the prospecting activities. Bare areas may become vulnerable to Alien and Invasive Plant species and these may compete with indigenous species, likely leading to the migration of sensitive species from the site to a more favourable habitat.
- Endemic and/or SCC species could possibly occur within the operational footprint area and would then be damaged or destroyed without proper knowledge and/or mitigation measures.
- Anthropogenic influence stemming from staff and contractors that infiltrate the natural veld areas may damage and impact on species communities within these areas.
- Human activity may impact on the faunal communities within the area. Associated noise, waste, the smell of humans, physical infiltration into natural areas are problematic and may lead to declining populations (where the disturbance of habitat has caused habitat remaining to become unfavorable).

8.3. Flora Impact Assessment and Risk Evaluation

8.3.1. Impact on overall floral biodiversity due to development activities

Phase of development: operation

Impact		
Invasive prospecting and associated activities will lead to destruction and damage of habitat and overall loss of floral and faunal species within the clearance and operational area. As a result of the activities degradation or compression may occur if heavy construction vehicles are not kept to the demarcated roads.		
	No Mitigation	With Mitigation
Extent	Footprint (1)	0.6 (Medium) ME
Duration	Short to medium term (2)	
Magnitude	Medium (3)	
Probability	Definite (5)	
Weighting factor	Low to medium (2)	
Significance Rating (SR)	Low to Medium (22)	Low (13)

Recommended mitigation measures:

- All footprint areas should remain as small as possible.
- A control of access should be implemented for all remaining natural areas to prevent unnecessary destruction of habitats or disturbance of species. It is also vital that no additional fragmentation occurs and that all roads are clearly demarcated and kept to without any exceptions. No vehicles or personnel are permitted outside of these demarcated roads.
- The vegetation removal should be controlled and very specific.
- Continuous rehabilitation of the area should occur, where re-vegetation practices should be prioritised.

8.3.2. Impact on floral biodiversity due to exotic and invasive plant species

Phase of development: operation

Impact		
Vegetation clearance will likely destroy habitats and lead to possible invasive and/or exotic species establishing in the area and edge-effects occurring surrounding the prospecting activities. Bare areas may become vulnerable to Alien and Invasive Plant species and these may compete with indigenous species, likely leading to the migration of sensitive species from the site to a more favourable habitat.		
	No Mitigation	With Mitigation
Extent	Regional (3)	0.6 (Medium) ME
Duration	Long term (4)	
Magnitude	Medium (3)	
Probability	Possible (3)	
Weighting factor	Medium (3)	
Significance Rating (SR)	Low to medium (39)	Low to medium (23)

Recommended mitigation measures:

- Alien Invasive Plant (AIP) control measures should be implemented for the control of invasive and exotic plant species.

8.3.3. Impact on floral species of conservation concern and sensitive habitats

Phase of development: operation

Impact		
Invasive prospecting and associated activities may impact on areas designated as high sensitivity, including critical biodiversity areas, ecological support areas, koppies, ridges and watercourses situated in and around the Prospecting Right area. The EAP has indicated that drilling will not be undertaken in close proximity to rivers and streams.		
The activity may lead to the loss of floral species of conservation concern. However, based on the desktop study findings, no flora SCC are considered to be likely to occur on the project area.		
	No Mitigation	With Mitigation
Extent	Regional (3)	0.4 (Medium to high) ME
Duration	Long term (4)	
Magnitude	Medium (3)	
Probability	Possible (2)	
Weighting factor	Medium (3)	
Significance Rating (SR)	Low to Medium (36)	Low (14)

Recommended mitigation measures:

- All footprint areas should remain as small as possible.
- If any SCC are encountered within the subject property in the future, the following should be ensured:
 - If any threatened species will be disturbed, ensure effective relocation of individuals to suitable offset areas or within designated open space on the subject property.
 - All rescue and relocation plans should be overseen by a suitably qualified specialist.
 - Obtain relevant permits/consent, if applicable, for each protected or endangered floral species identified within the proposed development area that will be destroyed.
- Placement of the infrastructure and activities should be planned to avoid sensitive areas such as koppies, ridges, rivers and streams.

8.3.4. Impact on floral species due to Closure / Post-closure Phase

Phase of development: closure / post-closure

Impact		
Rehabilitation could be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance. Without the necessary mitigation measures, rehabilitation will be less successful and the ecology of the impacted areas may not recover to a pre-prospecting state.		
Without mitigation the alien invasive species may increase and result in a degraded veld condition making the property less viable for post-closure land use activities such as wilderness, grazing and agriculture.		
	No Mitigation	With Mitigation
Extent	Site (2)	0.6 ME
Duration	Medium term (3)	
Magnitude	Medium (3)	
Probability	Likely (3)	
Weighting factor	Medium-High (4)	
Significance Rating (SR)	Medium (44)	Low to Medium (26)

Recommended mitigation measures:

- Alien Invasive Plant (AIP) control measures should be implemented for the control of invasive and exotic plant species.
- Prior to finalisation of the activities and closure, an AIP survey must be undertaken to determine that AIP are present in and around the project footprint.
- Rehabilitation plans should be planned long before the closure phase is due. Continuous rehabilitation should also take place during the operational phase.
- Rehabilitation plan should be implemented. This includes the process of replanting the vegetation. Rehabilitation plans should be compiled with the use of a specialist and the correct seeding techniques and mixtures should be applied.

8.4. Fauna Impact Assessment and Risk Evaluation

8.4.1. Impact on faunal species due to the invasive prospecting activities

Phase of development: operation

Impact		
The onset of activities might result in impacts to the natural environment and fauna due to increased movement, traffic and large machinery to the area.		
	No Mitigation	With Mitigation
Extent	Regional (3)	0.4 ME
Duration	Long term (4)	
Magnitude	Medium (3)	
Probability	Definite (5)	
Weighting factor	Medium-High (4)	
Significance Rating (SR)	Medium to High (60)	Low to Medium (24)

Recommended mitigation measures:

- Demarcate specific areas to be developed and remain clear of other areas where activities are not necessary.
- To minimize potential impacts to animal species, animals (wildlife and domestic animals) may under no circumstances be handled, removed, killed or interfered with by the Contractor, his employees, his Sub-Contractors or his Sub-Contractors' employees.
- Continuous rehabilitation of the area should occur, with concurrent rehabilitation of drilling areas as the project continues. This will entail the spreading of topsoil, revegetation and management of invasive species.
- Any nests encountered should be avoided.

Phase of development: operation

Impact		
River and streams occurring on the Prospecting Right area may be impacted due to the invasive prospecting and related activities and may result in the destruction of riparian habitat for sensitive species. Impacts within these areas could lead to destruction and degradation of habitats and food associated with these drainage / riverine areas.		
The EAP has indicated that drilling will not be undertaken in close proximity to rivers and streams.		
	No Mitigation	With Mitigation
Extent	Regional (3)	0.2 ME
Duration	Long term (4)	
Magnitude	Medium (3)	
Probability	Possible (2)	
Weighting factor	Medium (3)	
Significance Rating (SR)	Low to Medium (36)	Low (7)

Recommended mitigation measures:

- To minimize potential impacts to animal species, animals (wildlife and domestic animals) may under no circumstances be handled, removed, killed or interfered with by the Contractor, his employees, his Sub-Contractors or his Sub-Contractors' employees.
- Placement of the infrastructure and activities should be planned to avoid sensitive areas such as koppies, rivers and streams.

Phase of development: operation

Impact		
The operational activities might result in impacts to the natural environment and faunal species due to prolonged activity and movement to and from the area.		
	No Mitigation	With Mitigation
Extent	Regional (3)	0.8 ME
Duration	Medium term (3)	
Magnitude	Low (1)	
Probability	Possible (2)	
Weighting factor	Medium (3)	
Significance Rating (SR)	Low to Medium (27)	

Recommended mitigation measures:

- All footprint areas should remain as small as possible.
- Demarcate specific areas to be developed and remain clear of other areas where activities are not necessary.
- Continuous rehabilitation of the area should occur to ensure all impacts identified during operational phase is speedily managed and restored. This includes erosion and the management of invasive plant species that may decrease the integrity of the vegetation types as a specialised habitat for animals.

8.4.2. Closure/Post-Closure Phase for All Developments

Phase of development: Closure and Rehabilitation

Impact		
Increased activity and traffic within a shorter timeframe (closure phase) may degrade the area. The possibility exists for rehabilitation to be ineffective if measures are not appropriately complied to or rehabilitation is not planned well in advance.		
	No Mitigation	With Mitigation
Extent	Regional (3)	0.4 ME
Duration	Long term (4)	
Magnitude	Medium (3)	
Probability	Definite (5)	
Weighting factor	Medium-High (4)	
Significance Rating (SR)	Medium to High (60)	

Recommended mitigation measures:

- Active rehabilitation of degraded landscapes should commence as soon as practically possible.
- Rehabilitation plans should be planned long before the closure phase is due.
- To minimize potential impacts to animal species, animals (wildlife and domestic animals) may under no circumstances be handled, removed, killed or interfered with by the Contractor, his employees, his Sub-Contractors or his Sub-Contractors' employees.
- Ensure that an acceptable aesthetic scenario is created post closure. This will be reached through adequate rehabilitation practices by restoring damaged and degraded habitat areas.

9. ECOLOGICAL MANAGEMENT PLAN

9.1. Pre-Construction Phase

- Sensitive ridge / koppie, riverine and riparian vegetation habitat constitute the most important features which make up the area identified as increased sensitivity. Suitable ecological buffers should be calculated for the river system and the infrastructure should keep clear of these sensitive areas.

9.2. Construction and Operational Phases

9.2.1. Aim and Objectives

- Prevent the needless loss of or damage to fauna and flora, particularly with regard to SCC.
- Prevent the needless death, injury or hindrance to fauna, particularly with regard to protected species.
- Prevent or limit significant alteration to the ecosystems in the area.

9.2.2. Mitigation and Management measures

- Adhere to mitigation measures as prescribed in this report as well as the EMPr to prevent and mitigate impacts associated with the proposed project.
- The river systems, koppies and ridges should be avoided by the proposed invasive prospecting and associated activities.
- Responsible persons from the staff members/workers should be identified to ensure that the necessary mitigation measures are implemented and established. These personnel should also enforce the collaboration of other staff members, contractors and visitors to comply with these mitigation measures.
- Alien Invasive Plant (AIP) control measures should be implemented for the control of invasive and exotic plant species.
- Adequate waste storage and disposal must be implemented at the development. Littering must be prevented and regularly cleaned up and form part of good housekeeping practices to be implemented around site.
- Ensure awareness amongst all staff, contractors and visitors to site to not needlessly harm or hinder animals or damage flora.
- No additional fragmentation should occur and all roads should be clearly demarcated and kept to without any exceptions and within the proposed footprints where possible.
- All footprint areas should remain as small as possible.
- The vegetation removal should be controlled and should be very specific.
- It is vital that if any endemic, rare or vulnerable species occurs on the proposed site that these species should be protected and/or left undisturbed as far as possible. Only as an exception can these species be relocated to favourable sites with the use of a specialist prior to vegetation and habitat removal. If at any point any SCC is encountered, a specialist should be consulted as to determine the best way forward and a permit should be obtained if any intervention is required.

9.3. Decommissioning and Closure

- Prior to finalisation of the activities and closure, an AIP survey must be undertaken to determine that AIP are present in and around the project footprint.
- Rehabilitation plans should be planned long before the closure phase is due. Continuous rehabilitation should also take place during the operational phase.
- Rehabilitation plan should be implemented. This includes the process of replanting the vegetation. Rehabilitation plans should be compiled with the use of a specialist and the correct seeding techniques and mixtures should be applied.
- Ensure that an acceptable aesthetic scenario is created post closure.
- When closure is considered successful and rehabilitation complete, unnecessary fences/barriers should be lifted to restore larger foraging areas.
- Re-vegetation of all degraded areas and bare patches is advised to speed recovery to natural, self-sustaining state as soon as possible.

9.4. Monitoring

An ECO or appropriately appointed person must ensure that all impacts remain within the approved footprint and remains in compliance with the approved EMPr.

Monitoring should start as soon as the operational phase of the development activities commences. The monitoring should include the following:

- Implement an Observe and Report approach which will enable employees/locals to report any disturbance of fauna or degradation that they encounter during the operational phase.
- Prior to finalisation of the activities and closure, an AIP survey must be undertaken to determine that AIP are present in and around the project footprint.

10. CONCLUSION

No field survey was conducted for the assessment and all results given within this document are based on desktop findings and assessments. Therefore, the results, typical flora, herpetofauna, avifauna and mammalian communities found within the study should/can therefore only be used as a general guideline.

Information on plant species previously recorded for the project area was extracted from the POSA online database hosted by SANBI. The results indicate that 90 plant species have been recorded in the area queried:

- Two Species of Conservation Concern (SCC) in terms of their Red List status have been recorded on POSA for the area queried. One additional flora species was listed for the project area in the Environmental Screening Tool Report. All of these flora SCC are considered to have a low likelihood of occurrence on the project area.
- Two of the flora species recorded on POSA for the area are listed as protected in the NWBMA.
- Two protected tree species, in terms of the NFA, have been recorded on POSA for the area queried.
- Seven of the flora species recorded on POSA for the area are known to have medicinal uses.
- One exotic plant species were recorded to occur within the area queried.
- Five endemic plant species were recorded to occur within the area queried.

A desktop study was conducted to establish whether any potentially sensitive faunal species or species of conservation concern may possibly occur on site. The Virtual Museum and Animal Demography Unit (ADU) was used to compile species lists based on the sightings and data gathered from the South African Biodiversity Institute.

National SCC include mammalian and avifaunal species which are known to occur in the regional area where the project is proposed. Provincially protected species could also be expected to occur in the region. The following summary findings are provided:

- Mammals: 94 mammal species were found to possibly occur within the QDS, of which many are provincial SCC. Eighteen (18) of these species are SCC in a national context. The other species, largely game species, have a provincially protected status.
- Avifaunal: 274 bird species listed are listed for the area of which 11 are national SCC.
- Butterflies: 76 butterfly species were recorded for the area queried of which none are categorized as SCC nationally. However, all Charaxes butterflies are provincially protected.
- Other Invertebrates: Nine Lacewing species, 24 Dung beetles and four Odonata were listed for the QDS, none of which are listed in the IUCN Red list as SCC. However, all Dung beetle species are provincially protected.
- Reptiles: 36 reptile species were recorded for the QDS, none of which are considered national SCC. Several of these species are provincially protected.
- Amphibians: 20 amphibian species were listed within the QDS, but none of these species are considered SCC.

The project area is located on three vegetation types, namely Dwaalboom Thornveld (SVcb 1), Zeerust Thornveld (SVcb 3) and Dwarsberg-Swartruggens Mountain Bushveld (SVcb 4). All three vegetation types occurring on the project area are not listed in the “National List of Ecosystems that are Threatened and need of protection”, and as Least Concern by the 2018 National Biodiversity Assessment.

The study area contains the following classes from the NWBSP:

- CBA2: A few smaller, isolated CBA2 areas are located on the Prospecting Right area. These CBA2 areas on the project area appear to be largely associated with ridges and koppies and potential wetland features.
- ESA1: Larger, continuous ESA1 areas occur on the project area. The majority of the ESA1 areas are located on the eastern sections of the Prospecting Right area. These areas were most likely identified as ESA 1 areas due to their appearance as natural areas and their function as ecological corridors providing connectivity.
- ESA2: A few small, isolated ESA2 areas are located on the project footprint. These areas appear to be associated with vegetation previously disturbed by agricultural activities that fall within the ESA1 areas.

According to the South African Protected Areas Database (SAPAD) a number of Protected Areas, in terms of NEMPAA, are located within 10 km of the Prospecting Right area:

1. Madikwe Nature Reserve – 6 km north of PR area
2. Tweekoppiesfontein Private Nature Reserve – adjacent to western border of northern-most PR portion
3. Nellie Private Nature Reserve – 1 km west of PR area
4. Drie Annie Private Nature Reserve – adjacent to western-most portion of PR area
5. Koos Swart Private Nature Reserve – 4 km west of PR area
6. Thys Snyman Private Nature Reserve – 6 km west of PR area
7. Hillendale Private Nature Reserve – 8 km south of PR area

The NW/Gauteng Bushveld NPAES area is located on portions of the northern sections of the Prospecting Right area.

Various perennial and non-perennial rivers and streams flow across the Prospecting Right area. The most notable are:

- The Sehubyane River and its tributary, the Sandsloot River, flow through the southern section of the Prospecting Right area.
- The Madikwe River flows along the eastern border of the northern section of the Prospecting Right area.
- The Sehubyane River and Madikwe River confluence to form the Marico River, which flows in proximity to the eastern border of the northern section of the Prospecting Right area

Rivers and streams serve as ecological corridors, enable site and landscape level connectivity, and support ecological processes and are therefore considered to be of high ecological sensitivity.

The Prospecting Right area is located in a Freshwater Ecosystem Priority Area (FEPA), Phase 2 FEPA and Upstream FEPA.

From satellite imagery of the project area the following impacts are apparent:

- A number of formal and informal roads are located across the Prospecting Right area. Impacts from human and vehicle movement on these roads are expected.
- Mining activities have taken place or are currently taking place in the western-most portion of the Prospecting Right area.
- Current and historic agricultural activities, including crop farming and grazing.

Based on the desktop assessment findings, the specialist concurs with the sensitivity as presented on the National Web-based Environmental Screening Tool, with the inclusion of all rivers and stream as high sensitivity.

Sensitive ridge / koppie, riverine and riparian vegetation habitat constitute the most important features which make up the area identified as increased sensitivity. Suitable ecological buffers should be calculated for the river system and the infrastructure should keep clear of these sensitive areas.

It is the reasoned opinion of the specialist that the development may continue if all mitigation measures are implemented from the onset of the development.

11. REFERENCES

African-Eurasian Waterbird Agreement (AEWA)

BiodiversityGIS (BGIS): BGIS Municipal Summaries (www.bgis.sanbi.org)

GERMISHUIZEN, G., MEYER, N.L., STEENKAMP, Y and KEITH, M. (eds.) (2006). A checklist of South African plants.

HENDERSON, L. (2001). Alien weeds and invasive plants: a complete guide to declared weeds and invaders in South Africa. Agricultural Research Council, South Africa.

MUCINA, L. & RUTHERFORD, M.C. (2006). The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

Red listing source: Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland. 2014. Edited by Michael F. Bates, William R. Branch, Aaron M. Bauer, Marius Burger, Johan Marais, Graham J. Alexander & Marienne S. de Villiers. SANBI, Pretoria.

Red listing source: Mecenero, S., J.B. Ball, D.A. Edge, M.L. Hamer, G.A. Hening, M. Kruger, E.L. Pringle, R.F. Terblanche & M.C. Williams (eds). 2013. Conservation assessment of butterflies of South Africa, Lesotho and Swaziland: Red List and atlas. Safronics (Pty) Ltd., Johannesburg and Animal Demography Unit, Cape Town.

Red listing source: Minter LR, Burger M, Harrison JA, Braack HH, Bishop PJ & Kloepfer D (eds). 2004. Atlas and Red Data book of the frogs of South Africa, Lesotho and Swaziland. SI/MAB Series no. 9. Smithsonian Institution, Washington, D.C.

SARCA 2014: South African Reptile Conservation Association, Reptile Atlas of South Africa.

SKINNER, JD., CHIMIMBA, CT. (2005) The mammals of southern African subregion, Cambridge University Press

APPENDIX A: SPECIALISTS' CURRICULUM VITAE

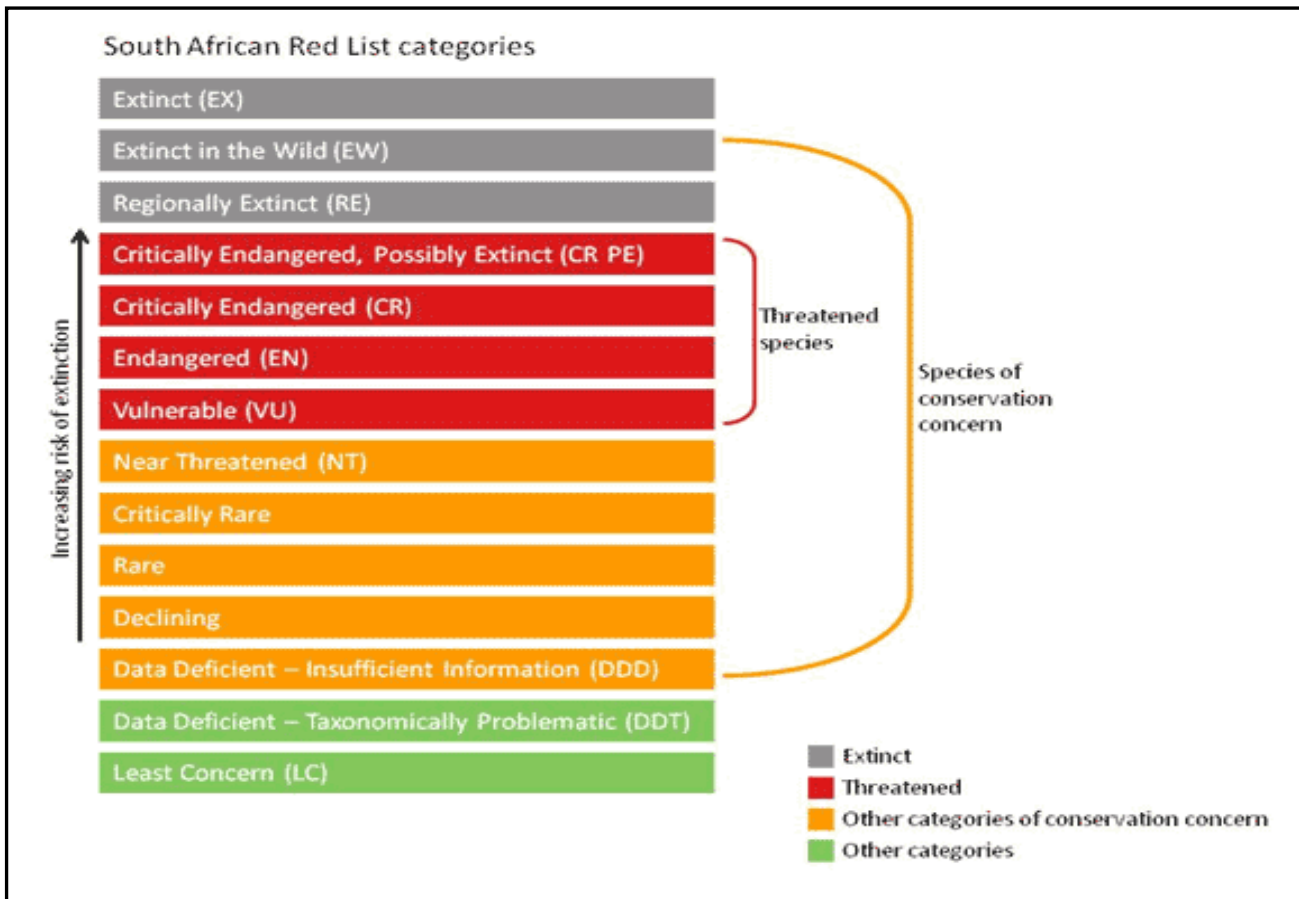


APPENDIX B: IUCN RED LIST DEFINITIONS

Categories marked with ^N are non-IUCN, national Red List categories for species not in danger of extinction but considered of conservation concern. The IUCN equivalent of these categories is Least Concern (LC).

Categories	Definition
Extinct (EX)	A species is Extinct when there is no reasonable doubt that the last individual has died. Species should be classified as Extinct only once exhaustive surveys throughout the species' known range have failed to record an individual.
Extinct in the Wild (EW)	A species 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.
Regionally Extinct (RE)	A species is Regionally Extinct when it is extinct within the region assessed (in this case South Africa), but wild populations can still be found in areas outside the region.
Critically Endangered, Possibly Extinct (CR PE)	Possibly Extinct is a special tag associated with the category Critically Endangered, indicating species that are highly likely to be extinct, but the exhaustive surveys required for classifying the species as Extinct has not yet been completed. A small chance remains that such species may still be rediscovered.
Critically Endangered (CR)	A species is Critically Endangered when the best available evidence indicates that it meets at least one of the five IUCN criteria for Critically Endangered, indicating that the species is facing an extremely high risk of extinction.
Endangered (EN)	A species is Endangered when the best available evidence indicates that it meets at least one of the five IUCN criteria for Endangered, indicating that the species is facing a very high risk of extinction.
Vulnerable (VU)	A species is Vulnerable when the best available evidence indicates that it meets at least one of the five IUCN criteria for Vulnerable, indicating that the species is facing a high risk of extinction.
Near Threatened (NT)	A species is Near Threatened when available evidence indicates that it nearly meets any of the IUCN criteria for Vulnerable and is therefore likely to become at risk of extinction in the near future.
^N Critically Rare	A species is Critically Rare when it is known to occur at a single site but is not exposed to any direct or plausible potential threat and does not otherwise qualify for a category of threat according to one of the five IUCN criteria.
^N Rare	A species is Rare when it meets at least one of 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 one of the five IUCN criteria. The four criteria are as follows: <ul style="list-style-type: none"> • Restricted range: Extent of Occurrence <500 km², OR • Habitat specialist: Species is restricted to a specialized microhabitat so that it has a very small Area of Occupancy, typically smaller than 20 km², OR • Low densities of individuals: Species always occurs as single individuals or very small subpopulations (typically fewer than 50 mature individuals) scattered over a wide area, OR • Small global population: Less than 10 000 mature individuals.
^N Declining	A species is Declining when it does not meet or nearly meet any of the five IUCN criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened, but there are threatening processes causing a continuing decline of the species.
Least Concern (LC)	A species is Least Concern when it has been evaluated against the IUCN criteria and does not qualify for any of the above categories. Species classified as Least Concern

Categories	Definition
	are considered at low risk of extinction. Widespread and abundant species are typically classified in this category.
Data Deficient - Insufficient Information (DDD)	A species is DDD when there is inadequate information to make an assessment of its risk of extinction, but the species is well defined. Listing of species in this category indicates that more information is required, and that future research could show that a threatened classification is appropriate.
Data Deficient - Taxonomically Problematic (DDT)	A species is DDT when taxonomic problems hinder the distribution range and habitat from being well defined, so that an assessment of risk of extinction is not possible.
Not Evaluated (NE)	A species is Not Evaluated when it has not been evaluated against the criteria. The national Red List of South African plants is a comprehensive assessment of all South African indigenous plants, and therefore all species are assessed and given a national Red List status. However, some species included in <u>Plants of southern Africa: an online checklist</u> are species that do not qualify for national listing because they are naturalized exotics, hybrids (natural or cultivated), or synonyms. These species are given the status Not Evaluated and the reasons why they have not been assessed are included in the assessment justification.



APPENDIX C: POSA FLORA SPECIES LIST

Species of Conservation Concern (SCC) or that have a conservation status are highlighted green

Exotic species are highlighted orange

Family	Species	Red List Status	Ecology	Conservation Status
Amaranthaceae	<i>Amaranthus thunbergii</i>	LC	Indigenous	
Poaceae	<i>Aristida bipartita</i>	LC	Indigenous	
Poaceae	<i>Aristida canescens</i>	LC	Indigenous	
Poaceae	<i>Aristida congesta</i>	LC	Indigenous	
Asparagaceae	<i>Asparagus laricinus</i>	LC	Indigenous	
Asteraceae	<i>Bidens bipinnata</i>		Not indigenous; Naturalised	
Acanthaceae	<i>Blepharis innocua</i>	LC	Indigenous; Endemic	Endemic
Acanthaceae	<i>Blepharis integrifolia</i>	LC	Indigenous	
Capparaceae	<i>Boscia albitrunca</i>	LC	Indigenous	NFA: Protected
Poaceae	<i>Brachiaria eruciformis</i>	LC	Indigenous	
Asphodelaceae	<i>Bulbine abyssinica</i>	LC	Indigenous	
Apocynaceae	<i>Ceropegia insignis</i>	EN	Indigenous; Endemic	Red List Status: EN; NWBMA: Protected
Fabaceae	<i>Chamaecrista biensis</i>	LC	Indigenous	
Verbenaceae	<i>Chascanum adenostachyum</i>	LC	Indigenous	
Asteraceae	<i>Cineraria alchemilloides</i>		Indigenous	
Cleomaceae	<i>Cleome maculata</i>	LC	Indigenous	
Combretaceae	<i>Combretum hereroense</i>		Indigenous	
Nyctaginaceae	<i>Commicarpus pentandrus</i>	LC	Indigenous	
Nyctaginaceae	<i>Commicarpus plumbagineus</i>	LC	Indigenous	
Convolvulaceae	<i>Convolvulus sagittatus</i>	LC	Indigenous	Medicinal
Malvaceae	<i>Corchorus asplenifolius</i>	LC	Indigenous	
Acanthaceae	<i>Crabbea hirsuta</i>	LC	Indigenous	
Amaryllidaceae	<i>Crinum paludosum</i>	LC	Indigenous	
Fabaceae	<i>Crotalaria eremicola</i>	LC	Indigenous	
Cucurbitaceae	<i>Cucumis myriocarpus</i>	LC	Indigenous	
Poaceae	<i>Cymbopogon pospischilii</i>	NE	Indigenous	
Pedaliaceae	<i>Dicerocaryum senecioides</i>	LC	Indigenous	
Asteraceae	<i>Dicoma anomala</i>	LC	Indigenous	
Asteraceae	<i>Dicoma macrocephala</i>	LC	Indigenous	
Poaceae	<i>Digitaria eriantha</i>	LC	Indigenous	
Ebenaceae	<i>Diospyros lycioides</i>	LC	Indigenous	Medicinal
Malvaceae	<i>Dombeya rotundifolia</i>	LC	Indigenous	Medicinal
Poaceae	<i>Eragrostis curvula</i>	LC	Indigenous	
Ebenaceae	<i>Euclea undulata</i>	LC	Indigenous	Medicinal
Euphorbiaceae	<i>Euphorbia inaequilatera</i>	LC	Indigenous	NWBMA: Protected
Iridaceae	<i>Gladiolus sericeovillosus</i>	LC	Indigenous	
Boraginaceae	<i>Heliotropium nelsonii</i>	LC	Indigenous	
Boraginaceae	<i>Heliotropium strigosum</i>	LC	Indigenous	
Amaranthaceae	<i>Hermstaedtia odorata</i>	NE	Indigenous	
Poaceae	<i>Heteropogon contortus</i>	LC	Indigenous	
Malvaceae	<i>Hibiscus pusillus</i>	LC	Indigenous	
Asteraceae	<i>Hilliardiella elaeagnoides</i>		Indigenous	
Asteraceae	<i>Hirpicium bechuanense</i>	LC	Indigenous	
Fabaceae	<i>Indigofera glaucescens</i>	LC	Indigenous; Endemic	Endemic
Fabaceae	<i>Indigofera heterotricha</i>	LC	Indigenous	
Fabaceae	<i>Indigofera leendertziae</i>	DD	Indigenous; Endemic	Endemic
Convolvulaceae	<i>Ipomoea bolusiana</i>	LC	Indigenous	

Family	Species	Red List Status	Ecology	Conservation Status
Convolvulaceae	<i>Ipomoea papilio</i>	LC	Indigenous	
Convolvulaceae	<i>Ipomoea sinensis</i>	LC	Indigenous	
Scrophulariaceae	<i>Jamesbrittenia atropurpurea</i>	LC	Indigenous	
Acanthaceae	<i>Justicia betonica</i>	LC	Indigenous	
Rubiaceae	<i>Kohautia caespitosa</i>	LC	Indigenous	
Verbenaceae	<i>Lantana rugosa</i>	LC	Indigenous	
Lamiaceae	<i>Leonotis pentadentata</i>	LC	Indigenous	
Fabaceae	<i>Lotononis burchellii</i>	LC	Indigenous; Endemic	Endemic
Poaceae	<i>Melinis repens</i>	LC	Indigenous	
Oleaceae	<i>Menodora heterophylla</i>	LC	Indigenous	
Convolvulaceae	<i>Merremia verecunda</i>	LC	Indigenous	
Fabaceae	<i>Mundulea sericea</i>	LC	Indigenous	
Lamiaceae	<i>Orthosiphon suffrutescens</i>	LC	Indigenous	
Polygonaceae	<i>Oxygonum dregeanum</i>	NE	Indigenous	
Rubiaceae	<i>Pavetta zeyheri</i>	LC	Indigenous	
Fabaceae	<i>Peltophorum africanum</i>	LC	Indigenous	
Phyllanthaceae	<i>Phyllanthus maderaspatensis</i>	LC	Indigenous	
Caryophyllaceae	<i>Pollichia campestris</i>	LC	Indigenous	
Polygalaceae	<i>Polygala leptophylla</i>	LC	Indigenous	
Portulacaceae	<i>Portulaca kermesina</i>	LC	Indigenous	
Fabaceae	<i>Rhynchosia minima</i>	NE	Indigenous	
Anacardiaceae	<i>Sclerocarya birrea</i>	LC	Indigenous	NFA: Protected; medicinal
Anacardiaceae	<i>Searsia dregeana</i>	LC	Indigenous	
Anacardiaceae	<i>Searsia maricoana</i>	VU	Indigenous; Endemic	Red List Status: VU
Anacardiaceae	<i>Searsia pyroides</i>	LC	Indigenous	
Fabaceae	<i>Senegalia caffra</i>	LC	Indigenous	Medicinal
Amaranthaceae	<i>Sericorema remotiflora</i>	LC	Indigenous	
Poaceae	<i>Setaria incrassata</i>	LC	Indigenous	
Solanaceae	<i>Solanum campylacanthum</i>		Indigenous	
Talinaceae	<i>Talinum arnotii</i>	LC	Indigenous	
Fabaceae	<i>Tephrosia semiglabra</i>	LC	Indigenous	
Fabaceae	<i>Teramnus labialis</i>	LC	Indigenous	
Poaceae	<i>Themeda triandra</i>	LC	Indigenous	
Santalaceae	<i>Thesium resedoides</i>	LC	Indigenous	
Malvaceae	<i>Triumfetta sonderi</i>	LC	Indigenous; Endemic	Endemic
Poaceae	<i>Urochloa panicoides</i>	LC	Indigenous	
Fabaceae	<i>Vachellia karroo</i>	LC	Indigenous	Medicinal
Fabaceae	<i>Vachellia tenuispina</i>	LC	Indigenous	
Fabaceae	<i>Vachellia tortilis</i>	LC	Indigenous	
Lamiaceae	<i>Vitex zeyheri</i>	LC	Indigenous	
Convolvulaceae	<i>Xenostegia tridentata</i>	LC	Indigenous	
Rhamnaceae	<i>Ziziphus mucronata</i>	LC	Indigenous	Medicinal

APPENDIX D: FAUNA SPECIES LIST FOR QDS

Mammal species found in QDS 2436CD, 2526AA, 2526AB, 2526AC and 2526AD (MammalMAP)

Family	Scientific name	Common name	Red list category
Bathyergidae	<i>Cryptomys hottentotus</i>	Southern African Mole-rat	Least Concern (2016)
Bathyergidae	<i>Cryptomys hottentotus pretoriae</i>		
Bovidae	<i>Aepyceros melampus</i>	Impala	Least Concern, NWBA Schedule 5
Bovidae	<i>Alcelaphus buselaphus</i>	Hartebeest	LC, NWBA Schedule 2
Bovidae	<i>Alcelaphus buselaphus caama</i>	Red Hartebeest	Least Concern (2008), NWBA Schedule 2 & 5
Bovidae	<i>Antidorcas marsupialis</i>	Springbok	Least Concern (2016), NWBA Schedule 5
Bovidae	<i>Connochaetes gnou</i>	Black Wildebeest	Least Concern (2016), TOPS
Bovidae	<i>Connochaetes taurinus</i>	Blue Wildebeest	Least Concern (ver 3.1, 2017), NWBA Schedule 2 & 5
Bovidae	<i>Connochaetes taurinus taurinus</i>		Least Concern (2016)
Bovidae	<i>Damaliscus lunatus lunatus</i>	(Southern African) Tsessebe	Vulnerable (2016), TOPS
Bovidae	<i>Damaliscus pygargus phillipsi</i>	Blesbok	Least Concern (2016), NWBA Schedule 2 & 5
Bovidae	<i>Hippotragus equinus</i>	Roan Antelope	Endangered (2016), TOPS
Bovidae	<i>Hippotragus niger niger</i>	Sable	Vulnerable (2016), NWBA Schedule 2
Bovidae	<i>Kobus ellipsiprymnus</i>	Waterbuck	Least Concern (ver 3.1, 2016), NWBA Schedule 2
Bovidae	<i>Kobus ellipsiprymnus ellipsiprymnus</i>		Least Concern (ver 3.1, 2016), NWBA Schedule 2
Bovidae	<i>Kobus leche</i>	Lechwe	Near Threatened (2017)
Bovidae	<i>Oreotragus oreotragus</i>	Klipspringer	Least Concern (2016), NWBA Schedule 2
Bovidae	<i>Oryx gazella</i>	Gemsbok	Least Concern (2016), NWBA Schedule 2 & 5
Bovidae	<i>Pelea capreolus</i>	Vaal Rhebok	Near Threatened (2016), NWBA Schedule 2 & 5
Bovidae	<i>Raphicerus campestris</i>	Steenbok	Least Concern (2016), NWBA Schedule 5
Bovidae	<i>Redunca arundinum</i>	Southern Reedbuck	Least Concern (2016)
Bovidae	<i>Redunca fulvorufula</i>	Mountain Reedbuck	Least Concern, NWBA Schedule 2 & 5
Bovidae	<i>Sylvicapra grimmia</i>	Bush Duiker	Least Concern (2016), NWBA Schedule 5
Bovidae	<i>Syncerus caffer</i>	African Buffalo	Least Concern (2008), NWBA Schedule 2
Bovidae	<i>Taurotragus oryx</i>	Common Eland	Least Concern (2016), NWBA Schedule 2 & 5
Bovidae	<i>Tragelaphus angasii</i>	Nyala	Least Concern (2016)
Bovidae	<i>Tragelaphus scriptus</i>	Bushbuck	Least Concern, NWBA Schedule 2
Bovidae	<i>Tragelaphus strepsiceros</i>	Greater Kudu	Least Concern (2016), NWBA Schedule 5
Canidae	<i>Canis mesomelas</i>	Black-backed Jackal	Least Concern (2016), NWBA Schedule 4
Canidae	<i>Lycaon pictus</i>	African wild dog	Endangered (2016) – Listed large predator (NWBA), TOPS, Flagged by Screening Tool Report
Cercopithecidae	<i>Chlorocebus pygerythrus</i>	Vervet Monkey	Least Concern (2016)
Cercopithecidae	<i>Papio ursinus</i>	Chacma Baboon	Least Concern (2016)
Elephantidae	<i>Loxodonta africana</i>	African Bush Elephant	Vulnerable A2a (2008), TOPS
Equidae	<i>Equus quagga</i>	Plains Zebra	Least Concern (2016), NWBA Schedule 2 & 5

Family	Scientific name	Common name	Red list category
Felidae	<i>Acinonyx jubatus</i>	Cheetah	Vulnerable (2016) – Listed large predator, TOPS, Flagged by Screening Tool Report
Felidae	<i>Caracal caracal</i>	Caracal	Least Concern (2016)
Felidae	<i>Felis silvestris</i>	Wildcat	Least Concern (2016)
Felidae	<i>Leptailurus serval</i>	Serval	Near Threatened (2016), TOPS
Felidae	<i>Panthera leo</i>	Lion	Least Concern (2016) – Listed large predator, TOPS
Felidae	<i>Panthera pardus</i>	Leopard	Vulnerable (2016) – Listed large predator, TOPS
Galagidae	<i>Galago moholi</i>	Mohol Bushbaby	Least Concern (2016), NWBA Schedule 2
Galagidae	<i>Galago senegalensis</i>	Senegal Bushbaby	
Giraffidae	<i>Giraffa giraffa giraffa</i>	South African Giraffe	Least Concern (2016), NWBA Schedule 2
Herpestidae	<i>Atilax paludinosus</i>	Marsh Mongoose	Least Concern (2016)
Herpestidae	<i>Cynictis penicillata</i>	Yellow Mongoose	Least Concern (2016)
Herpestidae	<i>Helogale parvula</i>	Common Dwarf Mongoose	Least Concern (2016), NWBA Schedule 2
Herpestidae	<i>Herpestes sanguineus</i>	Slender Mongoose	Least Concern (2016)
Herpestidae	<i>Mungos mungo</i>	Banded Mongoose	Least Concern (2016)
Hippopotamidae	<i>Hippopotamus amphibius</i>	Common Hippopotamus	Least Concern (2016), NWBA Schedule 2 & 5, Flagged by Screening Tool Report
Hyaenidae	<i>Crocuta crocuta</i>	Spotted Hyaena	Near Threatened (2016) – Listed large predator, TOPS
Hyaenidae	<i>Hyaena brunnea</i>	Brown Hyena	Near Threatened (2015), TOPS
Hyaenidae	<i>Proteles cristata</i>	Aardwolf	Least Concern (2016), NWBA Schedule 2
Hystricidae	<i>Hystrix africae australis</i>	Cape Porcupine	Least Concern, NWBA Schedule 4
Leporidae	<i>Lepus saxatilis</i>	Scrub Hare	Least Concern, NWBA Schedule 4
Leporidae	<i>Pronolagus sp.</i>	Rock-hares	NWBA Schedule 4
Leporidae	<i>Pronolagus randensis</i>	Jameson's Red Rock Hare	Least Concern (2016), NWBA Schedule 4
Macroscelididae	<i>Elephantulus myurus</i>	Eastern Rock Elephant Shrew	Least Concern (2016), NWBA Schedule 2
Manidae	<i>Smutsia temminckii</i>	Ground Pangolin	Vulnerable (2016), TOPS
Molossidae	<i>Tadarida aegyptiaca</i>	Egyptian Free-tailed Bat	Least Concern (2016), NWBA Schedule 2
Muridae	<i>Acomys sp.</i>	Spiny Mice	
Muridae	<i>Aethomys chrysophilus</i>	Red Veld Aethomys	Least Concern (2016)
Muridae	<i>Aethomys ineptus</i>	Tete Veld Aethomys	Least Concern (2016)
Muridae	<i>Aethomys namaquensis</i>	Namaqua Rock Mouse	Least Concern
Muridae	<i>Gerbilliscus brantsii</i>	Highveld Gerbil	Least Concern (2016)
Muridae	<i>Gerbilliscus leucogaster</i>	Bushveld Gerbil	Least Concern (2016)
Muridae	<i>Lemniscomys rosalia</i>	Single-Striped Lemniscomys	Least Concern (2016)
Muridae	<i>Mastomys sp.</i>	Multimammate Mice	
Muridae	<i>Mastomys coucha</i>	Southern African Mastomys	Least Concern (2016)
Muridae	<i>Mastomys natalensis</i>	Natal Mastomys	Least Concern (2016)
Muridae	<i>Mus (Nannomys) minutoides</i>	Southern African Pygmy Mouse	Least Concern
Muridae	<i>Otomys angoniensis</i>	Angoni Vlei Rat	Least Concern (2016)
Muridae	<i>Otomys auratus</i>	Southern African Vlei Rat (Grassland type)	Near Threatened (2016)
Mustelidae	<i>Aonyx capensis</i>	African Clawless Otter	Near Threatened (2016), NWBA Schedule 2 & 5
Mustelidae	<i>Mellivora capensis</i>	Honey Badger	Least Concern (2016), TOPS
Nesomyidae	<i>Saccostomus campestris</i>	Southern African Pouched Mouse	Least Concern (2016)
Nycteridae	<i>Nycteris thebaica</i>	Egyptian Slit-faced Bat	Least Concern (2016), NWBA Schedule 2

Family	Scientific name	Common name	Red list category
Pedetidae	<i>Pedetes capensis</i>	South African Spring Hare	Least Concern (2016), NWBA Schedule 4
Procaviidae	<i>Procavia capensis</i>	Cape Rock Hyrax	Least Concern (2016)
Rhinolophidae	<i>Rhinolophus clivosus</i>	Geoffroy's Horseshoe Bat	Least Concern (2016), NWBA Schedule 2
Rhinolophidae	<i>Rhinolophus darlingi</i>	Darling's Horseshoe Bat	Least Concern (2016), NWBA Schedule 2
Rhinolophidae	<i>Rhinolophus simulator</i>	Bushveld Horseshoe Bat	Least Concern (2016), NWBA Schedule 2
Sciuridae	<i>Paraxerus cepapi</i>	Smith's Bush Squirrel	Least Concern (2016), NWBA Schedule 4
Sciuridae	<i>Xerus inauris</i>	South African Ground Squirrel	Least Concern, , NWBA Schedule 4
Soricidae	<i>Crociodura mariquensis</i>	Swamp Musk Shrew	Near Threatened (2016), NWBA Schedule 2
Suidae	<i>Phacochoerus africanus</i>	Common Warthog	Least Concern (2016), NWBA Schedule 4
Suidae	<i>Potamochoerus larvatus koiropotamus</i>	Bush-pig (subspecies <i>koiropotamus</i>)	Least Concern (2016), NWBA Schedule 4
Suidae	<i>Potamochoerus porcus</i>	Red River Hog	
Vespertilionidae	<i>Neoromicia capensis</i>	Cape Serotine	Least Concern (2016)
Vespertilionidae	<i>Pipistrellus (Pipistrellus) rusticus</i>	Rusty Pipistrelle	Near Threatened
Vespertilionidae	<i>Pipistrellus zuluensis</i>	Zulu Serotine	Least Concern
Vespertilionidae	<i>Scotophilus dinganii</i>	Yellow-bellied House Bat	Least Concern (2016), NWBA Schedule 2
Viveridae	<i>Genetta maculata</i>	Common Large-spotted Genet	Least Concern
Viverridae	<i>Civettictis civetta</i>	African Civet	Least Concern (2016), NWBA Schedule 2
Viverridae	<i>Genetta tigrina</i>	Cape Genet (Cape Large-spotted Genet)	Least Concern (2016)

Avifaunal species found in pentad 2450_2615, 2450_2620, 2455_2615, 2455_2620, 2500_2610, 2500_2615, 2500_2620, 2505_2610, 2505_2615, 2505_2620, 2510_2610, 2510_2615, 2510_2620, 2515_2605, 2515_2610, 2515_2615, 2515_2620, 2520_2610, 2520_2615

Common Name	Scientific Name	Regional	Global
Brubru	<i>Nilaus afer</i>		
Hamerkop	<i>Scopus umbretta</i>		
Neddicky	<i>Cisticola fulvicapilla</i>		
Quailfinch	<i>Ortygospiza atricollis</i>		
Apalis, Bar-throated	<i>Apalis thoracica</i>		
Avocet, Pied	<i>Recurvirostra avosetta</i>		
Babbler, Arrow-marked	<i>Turdoides jardineii</i>		
Babbler, Southern Pied	<i>Turdoides bicolor</i>		
Barbet, Acacia Pied	<i>Tricholaema leucomelas</i>		
Barbet, Black-collared	<i>Lybius torquatus</i>		
Barbet, Crested	<i>Trachyphonus vaillantii</i>		
Batis, Chinspot	<i>Batis molitor</i>		
Bee-eater, Blue-cheeked	<i>Merops persicus</i>		
Bee-eater, European	<i>Merops apiaster</i>		
Bee-eater, Little	<i>Merops pusillus</i>		
Bee-eater, Southern Carmine	<i>Merops nubicoides</i>		
Bee-eater, White-fronted	<i>Merops bullockoides</i>		
Bishop, Southern Red	<i>Euplectes orix</i>		
Bishop, Yellow-crowned	<i>Euplectes afer</i>		
Boubou, Southern	<i>Laniarius ferrugineus</i>		
Bulbul, African Red-eyed	<i>Pycnonotus nigricans</i>		
Bulbul, Dark-capped	<i>Pycnonotus tricolor</i>		
Bunting, Cape	<i>Emberiza capensis</i>		
Bunting, Cinnamon-breasted	<i>Emberiza tahapisi</i>		
Bunting, Golden-breasted	<i>Emberiza flaviventris</i>		

Common Name	Scientific Name	Regional	Global
Bunting, Lark-like	<i>Emberiza impetuani</i>		
Bushshrike, Grey-headed	<i>Malaconotus blanchoti</i>		
Bushshrike, Orange-breasted	<i>Chlorophoneus sulfureopectus</i>		
Buttonquail, Common	<i>Turnix sylvaticus</i>		
Buzzard, Common	<i>Buteo buteo</i>		
Camaroptera, Grey-backed	<i>Camaroptera brevicaudata</i>		
Canary, Black-throated	<i>Crithagra atrogularis</i>		
Canary, Yellow	<i>Crithagra flaviventris</i>		
Canary, Yellow-fronted	<i>Crithagra mozambica</i>		
Chat, Ant-eating	<i>Myrmecocichla formicivora</i>		
Chat, Familiar	<i>Oenanthe familiaris</i>		
Cisticola, Desert	<i>Cisticola aridulus</i>		
Cisticola, Lazy	<i>Cisticola aberrans</i>		
Cisticola, Levaillant's	<i>Cisticola tinniens</i>		
Cisticola, Rattling	<i>Cisticola chiniana</i>		
Cisticola, Zitting	<i>Cisticola juncidis</i>		
Cormorant, Reed	<i>Microcarbo africanus</i>		
Cormorant, White-breasted	<i>Phalacrocorax lucidus</i>		
Coucal, Burchell's	<i>Centropus burchellii</i>		
Cursorer, Bronze-winged	<i>Rhinoptilus chalcopterus</i>		
Cursorer, Temminck's	<i>Cursorius temminckii</i>		
Crombec, Long-billed	<i>Sylvietta rufescens</i>		
Crow, Cape	<i>Corvus capensis</i>		
Crow, Pied	<i>Corvus albus</i>		
Cuckoo, African	<i>Cuculus gularis</i>		
Cuckoo, Black	<i>Cuculus clamosus</i>		
Cuckoo, Diederik	<i>Chrysococcyx caprius</i>		
Cuckoo, Great Spotted	<i>Clamator glandarius</i>		
Cuckoo, Jacobin	<i>Clamator jacobinus</i>		
Cuckoo, Klaas's	<i>Chrysococcyx klaas</i>		
Cuckoo, Levaillant's	<i>Clamator levaillantii</i>		
Cuckoo, Red-chested	<i>Cuculus solitarius</i>		
Cuckooshrike, Black	<i>Campephaga flava</i>		
Darter, African	<i>Anhinga rufa</i>		
Dove, Cape Turtle	<i>Streptopelia capicola</i>		
Dove, Emerald-spotted Wood	<i>Turtur chalcospilos</i>		
Dove, Laughing	<i>Spilopelia senegalensis</i>		
Dove, Namaqua	<i>Oena capensis</i>		
Dove, Red-eyed	<i>Streptopelia semitorquata</i>		
Drongo, Fork-tailed	<i>Dicrurus adsimilis</i>		
Duck, Knob-billed	<i>Sarkidiornis melanotos</i>		
Duck, White-faced Whistling	<i>Dendrocygna viduata</i>		
Duck, Yellow-billed	<i>Anas undulata</i>		
Eagle, African Fish	<i>Haliaeetus vocifer</i>		
Eagle, Black-chested Snake	<i>Circaetus pectoralis</i>		
Eagle, Brown Snake	<i>Circaetus cinereus</i>		
Eagle, Martial	<i>Polemaetus bellicosus</i>	EN, NWBA Schedule 2, TOPS	VU (EN 2021)
Eagle, Wahlberg's	<i>Hieraaetus wahlbergi</i>		
Eagle-Owl, Spotted	<i>Bubo africanus</i>		
Eagle-Owl, Verreaux's	<i>Bubo lacteus</i>		
Egret, Great	<i>Ardea alba</i>		
Egret, Little	<i>Egretta garzetta</i>		
Egret, Western Cattle	<i>Bubulcus ibis</i>		
Eremomela, Burnt-necked	<i>Eremomela usticollis</i>		

Common Name	Scientific Name	Regional	Global
Eremomela, Yellow-bellied	<i>Eremomela icteropygialis</i>		
Falcon, Amur	<i>Falco amurensis</i>		
Falcon, Lanner	<i>Falco biarmicus</i>	VU, NWBA Schedule 2	LC
Firefinch, Jameson's	<i>Lagonosticta rhodopareia</i>		
Firefinch, Red-billed	<i>Lagonosticta senegala</i>		
Fiscal, Southern	<i>Lanius collaris</i>		
Flamingo, Greater	<i>Phoenicopterus roseus</i>	NT, NWBA Schedule 2	LC
Flycatcher, African Paradise	<i>Terpsiphone viridis</i>		
Flycatcher, Fiscal	<i>Melaenornis silens</i>		
Flycatcher, Marico	<i>Melaenornis mariquensis</i>		
Flycatcher, Pale	<i>Melaenornis pallidus</i>		
Flycatcher, Southern Black	<i>Melaenornis pammelaina</i>		
Flycatcher, Spotted	<i>Muscicapa striata</i>		
Francolin, Coqui	<i>Peliperdix coqui</i>		
Francolin, Crested	<i>Dendroperdix sephaena</i>		
Go-away-bird, Grey	<i>Crinifer concolor</i>		
Goose, Egyptian	<i>Alopochen aegyptiaca</i>		
Goose, Spur-winged	<i>Plectropterus gambensis</i>		
Goshawk, Gabar	<i>Micronisus gabar</i>		
Goshawk, Pale Chanting	<i>Melierax canorus</i>		
Grebe, Little	<i>Tachybaptus ruficollis</i>		
Greenbul, Yellow-bellied	<i>Chlorocichla flaviventris</i>		
Greenshank, Common	<i>Tringa nebularia</i>		
Guineafowl, Helmeted	<i>Numida meleagris</i>		
Harrier, Montagu's	<i>Circus pygargus</i>		
Harrier-Hawk, African	<i>Polyboroides typus</i>		
Hawk-eagle, African	<i>Aquila spilogaster</i>		
Helmetshrike, White-crested	<i>Prionops plumatus</i>		
Heron, Black-crowned Night	<i>Nycticorax nycticorax</i>		
Heron, Black-headed	<i>Ardea melanocephala</i>		
Heron, Goliath	<i>Ardea goliath</i>		
Heron, Grey	<i>Ardea cinerea</i>		
Heron, Purple	<i>Ardea purpurea</i>		
Heron, Striated	<i>Butorides striata</i>		
Honeyguide, Greater	<i>Indicator indicator</i>		
Honeyguide, Lesser	<i>Indicator minor</i>		
Hoopoe, African	<i>Upupa africana</i>		
Hornbill, African Grey	<i>Lophoceros nasutus</i>		
Hornbill, Southern Red-billed	<i>Tockus rufirostris</i>		
Hornbill, Southern Yellow-billed	<i>Tockus leucomelas</i>		
Ibis, Hadada	<i>Bostrychia hagedash</i>		
Indigobird, Dusky	<i>Vidua funerea</i>		
Indigobird, Purple	<i>Vidua purpurascens</i>		
Indigobird, Village	<i>Vidua chalybeata</i>		
Kestrel, Greater	<i>Falco rupicoloides</i>		
Kestrel, Lesser	<i>Falco naumanni</i>		
Kestrel, Rock	<i>Falco rupicolus</i>		
Kingfisher, African Pygmy	<i>Ispidina picta</i>		
Kingfisher, Brown-hooded	<i>Halcyon albiventris</i>		
Kingfisher, Giant	<i>Megaceryle maxima</i>		
Kingfisher, Pied	<i>Ceryle rudis</i>		
Kingfisher, Woodland	<i>Halcyon senegalensis</i>		
Kite, Black-winged	<i>Elanus caeruleus</i>		
Kite, Yellow-billed	<i>Milvus aegyptius</i>		
Korhaan, Northern Black	<i>Afrotis afraoides</i>		

Common Name	Scientific Name	Regional	Global
Korhaan, Red-crested	<i>Lophotis ruficrista</i>		
Lapwing, African Wattled	<i>Vanellus senegallus</i>		
Lapwing, Blacksmith	<i>Vanellus armatus</i>		
Lapwing, Crowned	<i>Vanellus coronatus</i>		
Lark, Eastern Clapper	<i>Mirafra fasciolata</i>		
Lark, Monotonous	<i>Mirafra passerina</i>		
Lark, Red-capped	<i>Calandrella cinerea</i>		
Lark, Rufous-naped	<i>Mirafra africana</i>		
Lark, Sabota	<i>Calendulauda sabota</i>		
Lark, Short-clawed	<i>Certhilauda chuana</i>	NT, NWBA Schedule 2	LC
Longclaw, Cape	<i>Macronyx capensis</i>		
Martin, Common House	<i>Delichon urbicum</i>		
Martin, Rock	<i>Ptyonoprogne fuligula</i>		
Masked-weaver, Lesser	<i>Ploceus intermedius</i>		
Mousebird, Red-faced	<i>Urocolius indicus</i>		
Mousebird, Speckled	<i>Colius striatus</i>		
Mousebird, White-backed	<i>Colius colius</i>		
Myna, Common	<i>Acridotheres tristis</i>		
Nightjar, Fiery-necked	<i>Caprimulgus pectoralis</i>		
Nightjar, Freckled	<i>Caprimulgus tristigma</i>		
Nightjar, Rufous-cheeked	<i>Caprimulgus rufigena</i>		
Oriole, Black-headed	<i>Oriolus larvatus</i>		
Ostrich, Common	<i>Struthio camelus</i>		
Owl, African Scops	<i>Otus senegalensis</i>		
Owl, Southern White-faced Scops	<i>Ptilopsis granti</i>		
Owl, Western Barn	<i>Tyto alba</i>		
Owlet, Pearl-spotted	<i>Glaucidium perlatum</i>		
Oxpecker, Red-billed	<i>Buphagus erythrorhynchus</i>		
Peafowl, Indian	<i>Pavo cristatus</i>		
Pigeon, African Green	<i>Treron calvus</i>		
Pigeon, African Olive	<i>Columba arquatrix</i>		
Pigeon, Speckled	<i>Columba guinea</i>		
Pipit, African	<i>Anthus cinnamomeus</i>		
Pipit, Buffy	<i>Anthus vaalensis</i>		
Pipit, Plain-backed	<i>Anthus leucophrys</i>		
Plover, Common Ringed	<i>Charadrius hiaticula</i>		
Plover, Kittlitz's	<i>Charadrius pecuarius</i>		
Plover, Three-banded	<i>Charadrius tricollaris</i>		
Prinia, Black-chested	<i>Prinia flavicans</i>		
Prinia, Tawny-flanked	<i>Prinia subflava</i>		
Puffback, Black-backed	<i>Dryoscopus cubla</i>		
Pytilia, Green-winged	<i>Pytilia melba</i>		
Quail, Common	<i>Coturnix coturnix</i>		
Quelea, Red-billed	<i>Quelea quelea</i>		
Robin-Chat, White-throated	<i>Cossypha humeralis</i>		
Roller, European	<i>Coracias garrulus</i>	NT, NWBA Schedule 2	LC
Roller, Lilac-breasted	<i>Coracias caudatus</i>		
Roller, Purple	<i>Coracias naevius</i>		
Sandgrouse, Yellow-throated	<i>Pterocles gutturalis</i>	NT, NWBA Schedule 2	LC
Sandpiper, Common	<i>Actitis hypoleucos</i>		
Sandpiper, Marsh	<i>Tringa stagnatilis</i>		
Sandpiper, Wood	<i>Tringa glareola</i>		
Scimitarbill, Common	<i>Rhinopomastus cyanomelas</i>		
Scrub Robin, Kalahari	<i>Cercotrichas paena</i>		
Scrub Robin, White-browed	<i>Cercotrichas leucophrys</i>		

Common Name	Scientific Name	Regional	Global
Shrike, Crimson-breasted	<i>Laniarius atrococcineus</i>		
Shrike, Lesser Grey	<i>Lanius minor</i>		
Shrike, Magpie	<i>Urolestes melanoleucus</i>		
Shrike, Red-backed	<i>Lanius collurio</i>		
Shrike, Southern White-crowned	<i>Eurocephalus anguitimens</i>		
Sparrow, Cape	<i>Passer melanurus</i>		
Sparrow, Great	<i>Passer motitensis</i>		
Sparrow, House	<i>Passer domesticus</i>		
Sparrow, Southern Grey-headed	<i>Passer diffusus</i>		
Sparrow, Yellow-throated Bush	<i>Gymnoris superciliaris</i>		
Sparrow-Lark, Chestnut-backed	<i>Eremopterix leucotis</i>		
Sparrow-Weaver, White-browed	<i>Plocepasser mahali</i>		
Sparrowhawk, Black	<i>Accipiter melanoleucus</i>		
Sparrowhawk, Little	<i>Accipiter minullus</i>		
Sparrowhawk, Ovambo	<i>Accipiter ovampensis</i>		
Spoonbill, African	<i>Platalea alba</i>		
Spurfowl, Natal	<i>Pternistis natalensis</i>		
Spurfowl, Swainson's	<i>Pternistis swainsonii</i>		
Starling, Burchell's	<i>Lamprotornis australis</i>		
Starling, Cape	<i>Lamprotornis nitens</i>		
Starling, Red-winged	<i>Onychognathus morio</i>		
Starling, Violet-backed	<i>Cinnyricinclus leucogaster</i>		
Starling, Wattled	<i>Creatophora cinerea</i>		
Stilt, Black-winged	<i>Himantopus himantopus</i>		
Secretarybird	<i>Sagittarius serpentarius</i>	VU, NWBA Schedule 2 – Flagged by Screening Tool Report	VU
Stonechat, African	<i>Saxicola torquatus</i>		
Stork, Abdim's	<i>Ciconia abdimii</i>	NT, NWBA Schedule 2	LC
Stork, White	<i>Ciconia ciconia</i>		
Stork, Yellow-billed	<i>Mycteria ibis</i>	EN, NWBA Schedule 2	LC
Sunbird, Amethyst	<i>Chalcomitra amethystina</i>		
Sunbird, Marico	<i>Cinnyris mariquensis</i>		
Sunbird, White-bellied	<i>Cinnyris talatala</i>		
Swallow, Barn	<i>Hirundo rustica</i>		
Swallow, Greater Striped	<i>Cecropis cucullata</i>		
Swallow, Lesser Striped	<i>Cecropis abyssinica</i>		
Swallow, Pearl-breasted	<i>Hirundo dimidiata</i>		
Swallow, Red-breasted	<i>Cecropis semirufa</i>		
Swallow, White-throated	<i>Hirundo albigularis</i>		
Swift, African Black	<i>Apus barbatus</i>		
Swift, African Palm	<i>Cypsiurus parvus</i>		
Swift, Alpine	<i>Tachymarptis melba</i>		
Swift, Common	<i>Apus apus</i>		
Swift, Little	<i>Apus affinis</i>		
Swift, White-rumped	<i>Apus caffer</i>		
Tchagra, Black-crowned	<i>Tchagra senegalus</i>		
Tchagra, Brown-crowned	<i>Tchagra australis</i>		
Teal, Red-billed	<i>Anas erythrorhyncha</i>		
Tern, Whiskered	<i>Chlidonias hybrida</i>		
Thick-knee, Spotted	<i>Burhinus capensis</i>		
Thrush, Groundscraper	<i>Turdus litsitsirupa</i>		
Thrush, Karoo	<i>Turdus smithi</i>		
Thrush, Kurrichane	<i>Turdus libonyana</i>		
Tinkerbird, Yellow-fronted	<i>Pogoniulus chrysoconus</i>		
Tit, Ashy	<i>Melaniparus cinerascens</i>		

Common Name	Scientific Name	Regional	Global
Tit, Southern Black	<i>Melaniparus niger</i>		
Tit-Flycatcher, Grey	<i>Myioparus plumbeus</i>		
Vulture, Lappet-faced	<i>Torgos tracheliotos</i>	EN, NWBA Schedule 2, TOPS	EN
Vulture, White-backed	<i>Gyps africanus</i>	CR, NWBA Schedule 2, TOPS	CR
Wagtail, African Pied	<i>Motacilla aguimp</i>		
Wagtail, Cape	<i>Motacilla capensis</i>		
Warbler, Chestnut-vented	<i>Curruca subcoerulea</i>		
Warbler, Icterine	<i>Hippolais icterina</i>		
Warbler, Olive-tree	<i>Hippolais olivetorum</i>		
Warbler, Willow	<i>Phylloscopus trochilus</i>		
Waxbill, Black-faced	<i>Brunhilda erythronotos</i>		
Waxbill, Blue	<i>Uraeginthus angolensis</i>		
Waxbill, Common	<i>Estrilda astrild</i>		
Waxbill, Violet-eared	<i>Granatina granatina</i>		
Weaver, Red-billed Buffalo	<i>Bubalornis niger</i>		
Weaver, Red-headed	<i>Anaplectes rubriceps</i>		
Weaver, Scaly-feathered	<i>Sporopipes squamifrons</i>		
Weaver, Southern Masked	<i>Ploceus velatus</i>		
Weaver, Village	<i>Ploceus cucullatus</i>		
White-eye, Cape	<i>Zosterops virens</i>		
Whitethroat, Common	<i>Curruca communis</i>		
Whydah, Long-tailed Paradise	<i>Vidua paradisaea</i>		
Whydah, Pin-tailed	<i>Vidua macroura</i>		
Whydah, Shaft-tailed	<i>Vidua regia</i>		
Widowbird, Long-tailed	<i>Euplectes progne</i>		
Widowbird, White-winged	<i>Euplectes albonotatus</i>		
Wood Hoopoe, Green	<i>Phoeniculus purpureus</i>		
Woodpecker, Bearded	<i>Chloropicus namaquus</i>		
Woodpecker, Bennett's	<i>Campethera bennettii</i>		
Woodpecker, Cardinal	<i>Dendropicos fuscescens</i>		
Woodpecker, Golden-tailed	<i>Campethera abingoni</i>		
Wren-Warbler, Barred	<i>Calamonastes fasciolatus</i>		

Butterfly species occurring in QDS

Family	Scientific name	Common name	Red list category
Erebidae	<i>Dysgonia torrida</i>		Not listed
Erebidae	<i>Sphingomorpha chlorea</i>		Not listed
Erebidae	<i>Utetheisa pulchella</i>		Not listed
Geometridae	<i>Rhodometra sacraria</i>		Not Threatened (NT) [not an IUCN category]
Hesperiidae	<i>FAMILY HESPERIIDAE</i>	Unidentified HESPERIIDAE	
Hesperiidae	<i>Coeliades pisistratus</i>	Two-pip policeman	Least Concern (SABCA 2013)
Hesperiidae	<i>Gegenes pumilio gambica</i>	Dark dodger	Least Concern (SABCA 2013)
Hesperiidae	<i>Leucochitonea levubu</i>	White-cloaked skipper	Least Concern (SABCA 2013)
Hesperiidae	<i>Spialia spio</i>	Mountain sandman	Least Concern (SABCA 2013)
Lycaenidae	<i>Aloeides henningi</i>	Hillside russet	Least Concern (SABCA 2013)
Lycaenidae	<i>Aloeides taikosama</i>	Dusky russet	Least Concern (SABCA 2013)
Lycaenidae	<i>Anthene amarah amarah</i>	Black-striped ciliate blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Anthene talboti</i>	Savanna ciliate blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Axiocerses amanga amanga</i>	Bush scarlet	Least Concern (SABCA 2013)
Lycaenidae	<i>Axiocerses tjoane tjoane</i>	Eastern scarlet	Least Concern (SABCA 2013)
Lycaenidae	<i>Azonus jesous</i>	Topaz babul blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Azonus moriqua</i>	Black-bordered babul blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Azonus ubaldus</i>	Velvet-spotted babul blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Chilades trochylus</i>	Grass jewel blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Cigaritis ella</i>	Ella's silverline	Least Concern (SABCA 2013)

Family	Scientific name	Common name	Red list category
Lycaenidae	<i>Cupidopsis cissus cissus</i>	Meadow blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Cupidopsis jobates jobates</i>	Tailed meadow blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Eicochrysops messapus mahallakoana</i>	Cupreous ash blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Eicochrysops messapus messapus</i>	Cupreous ash blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Lampides boeticus</i>	Pea blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Leptomyrina henningi henningi</i>	Plain black-eye	Least Concern (SABCA 2013)
Lycaenidae	<i>Leptotes sp.</i>		
Lycaenidae	<i>Leptotes pirthous pirthous</i>	Common zebra blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Myrina silenus ficedula</i>	Common fig tree blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Pseudonacaduba sichela sichela</i>	Dusky line blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Tarucus sybaris sybaris</i>	Dotted pierrot	Least Concern (SABCA 2013)
Lycaenidae	<i>Tuxentius calice</i>	White pie	Least Concern (SABCA 2013)
Lycaenidae	<i>Tuxentius melaena melaena</i>	Black pie	Least Concern (SABCA 2013)
Lycaenidae	<i>Zintha hintza hintza</i>	Hintza pierrot	Least Concern (SABCA 2013)
Lycaenidae	<i>Zizeeria knysna knysna</i>	African grass blue	Least Concern (SABCA 2013)
Lycaenidae	<i>Zizula hylax</i>	Tiny grass blue	Least Concern (SABCA 2013)
Nymphalidae	<i>Acraea anemosa</i>	Broad-bordered acraea	Least Concern (SABCA 2013)
Nymphalidae	<i>Acraea caldarena caldarena</i>	Black-tipped acraea	Least Concern (SABCA 2013)
Nymphalidae	<i>Acraea natalica</i>	Black-based acraea	Least Concern (SABCA 2013)
Nymphalidae	<i>Acraea neobule neobule</i>	Wandering donkey acraea	Least Concern (SABCA 2013)
Nymphalidae	<i>Acraea stenobea</i>	Suffused acraea	Least Concern (SABCA 2013)
Nymphalidae	<i>Byblia sp.</i>		
Nymphalidae	<i>Byblia anvatarata acheloia</i>	African joker	Least Concern (SABCA 2013)
Nymphalidae	<i>Byblia ithyia</i>	Spotted joker	Least Concern (SABCA 2013)
Nymphalidae	<i>Charaxes achaemenes achaemenes</i>	Bushveld charaxes	Least Concern (SABCA 2013), NWBA Schedule 2
Nymphalidae	<i>Charaxes jahlusa rex</i>	Pearl-spotted charaxes	Least Concern (SABCA 2013), NWBA Schedule 2
Nymphalidae	<i>Charaxes saturnus saturnus</i>	Foxy charaxes	Least Concern (SABCA 2013), NWBA Schedule 2
Nymphalidae	<i>Charaxes vansoni</i>	Van Son's charaxes	Least Concern (SABCA 2013), NWBA Schedule 2
Nymphalidae	<i>Danaus chrysippus orientis</i>	African plain tiger	Least Concern (SABCA 2013)
Nymphalidae	<i>Hamanumida daedalus</i>	Guineafowl	Least Concern (SABCA 2013)
Nymphalidae	<i>Junonia hierta cebrene</i>	Yellow pansy	Least Concern (SABCA 2013)
Nymphalidae	<i>Phalanta phalantha aethiopica</i>	African leopard	Least Concern (SABCA 2013)
Nymphalidae	<i>Telchinia rahira rahira</i>	Marsh telchinia	Least Concern (SABCA 2013)
Nymphalidae	<i>Telchinia serena</i>	Dancing telchinia	Least Concern (SABCA 2013)
Nymphalidae	<i>Vanessa cardui</i>	Painted lady	Least Concern (SABCA 2013)
Papilionidae	<i>Papilio demodocus demodocus</i>	Citrus swallowtail	Least Concern (SABCA 2013)
Pieridae	<i>Belenois aurota</i>	Pioneer caper white	Least Concern (SABCA 2013)
Pieridae	<i>Belenois gidica abyssinica</i>	African veined white	Least Concern (SABCA 2013)
Pieridae	<i>Catopsilia florella</i>	African migrant	Least Concern (SABCA 2013)
Pieridae	<i>Colotis annae annae</i>	Scarlet tip	Least Concern (SABCA 2013)
Pieridae	<i>Colotis antevippe gavis</i>	Red tip	Least Concern (SABCA 2013)
Pieridae	<i>Colotis celimene amina</i>	Lilac tip	Least Concern (SABCA 2013)
Pieridae	<i>Colotis euipe omphale</i>	Southern round-winged orange tip	Least Concern (LC)
Pieridae	<i>Colotis evagore antigone</i>	Small orange tip	Least Concern (SABCA 2013)
Pieridae	<i>Colotis evenina evenina</i>	African orange tip	Least Concern (SABCA 2013)
Pieridae	<i>Colotis lais</i>	Kalahari orange tip	Least Concern (SABCA 2013)
Pieridae	<i>Colotis pallene</i>	Bushveld orange tip	Least Concern (SABCA 2013)
Pieridae	<i>Colotis regina</i>	Queen purple tip	Least Concern (SABCA 2013)
Pieridae	<i>Colotis vesta argillaceus</i>	Southern veined arab	Least Concern (SABCA 2013)

Family	Scientific name	Common name	Red list category
Pieridae	<i>Eurema brigitta brigitta</i>	Broad-bordered grass yellow	Least Concern (SABCA 2013)
Pieridae	<i>Mylothris agathina agathina</i>	Eastern dotted border	Least Concern (SABCA 2013)
Pieridae	<i>Pinacopteryx eriphia eriphia</i>	Zebra white	Least Concern (SABCA 2013)
Pieridae	<i>Pontia helice helice</i>	Southern meadow white	Least Concern (SABCA 2013)
Pieridae	<i>Teracolus agoye agoye</i>	Speckled sulphur tip	Least Concern (SABCA 2013)
Pieridae	<i>Teracolus eris eris</i>	Banded gold tip	Least Concern (SABCA 2013)
Pieridae	<i>Teracolus subfasciatus</i>	Lemon traveller	Least Concern (SABCA 2013)

Reptile species possibly occurring in QDS

Family	Scientific name	Common name	Red list category
	<i>Sensitive Species 12</i>		Least Concern (SARCA 2014), NWBA Schedule 2 – Flagged by Screening Tool Report
Agamidae	<i>Acanthocercus atricollis</i>	Southern Tree Agama	Least Concern (SARCA 2014)
Chamaeleonidae	<i>Chamaeleo dilepis</i>	Common Flap-neck Chameleon	Least Concern (SARCA 2014), NWBA Schedule 2
Colubridae	<i>Crotaphopeltis hotamboeia</i>	Red-lipped Snake	Least Concern (SARCA 2014)
Colubridae	<i>Dasypeltis scabra</i>	Rhombic Egg-eater	Least Concern (SARCA 2014)
Colubridae	<i>Philothamnus semivariegatus</i>	Spotted Bush Snake	Least Concern (SARCA 2014)
Colubridae	<i>Telescopus semiannulatus semiannulatus</i>	Eastern Tiger Snake	Least Concern (SARCA 2014), NWBA Schedule 2
Cordylidae	<i>Cordylus jonesii</i>	Jones' Girdled Lizard	Least Concern (SARCA 2014), NWBA Schedule 2
Cordylidae	<i>Cordylus vittifer</i>	Common Girdled Lizard	Least Concern (SARCA 2014), NWBA Schedule 2
Elapidae	<i>Elapsoidea sundevallii media</i>	Highveld Garter Snake	
Elapidae	<i>Naja annulifera</i>	Snouted Cobra	Least Concern (SARCA 2014)
Elapidae	<i>Naja mossambica</i>	Mozambique Spitting Cobra	Least Concern (SARCA 2014)
Gekkonidae	<i>Chondrodactylus turneri</i>	Turner's Gecko	Least Concern (SARCA 2014)
Gekkonidae	<i>Hemidactylus mabouia</i>	Common Tropical House Gecko	Least Concern (SARCA 2014)
Gekkonidae	<i>Homopholis arnoldi</i>	Arnold's Velvet Gecko	Not evaluated
Gekkonidae	<i>Lygodactylus capensis</i>	Common Dwarf Gecko	Least Concern (SARCA 2014)
Gekkonidae	<i>Pachydactylus affinis</i>	Transvaal Gecko	Least Concern (SARCA 2014)
Gekkonidae	<i>Pachydactylus capensis</i>	Cape Gecko	Least Concern (SARCA 2014)
Gerrhosauridae	<i>Gerrhosaurus flavigularis</i>	Yellow-throated Plated Lizard	Least Concern (SARCA 2014), NWBA Schedule 2
Lacertidae	<i>Meroles squamulosus</i>	Common Rough-scaled Lizard	Least Concern (SARCA 2014)
Lamprophiidae	<i>Aparallactus capensis</i>	Black-headed Centipede-eater	Least Concern (SARCA 2014)
Lamprophiidae	<i>Gracililima nyassae</i>	Black File Snake	Least Concern (SARCA 2014)
Lamprophiidae	<i>Lycophidion capense capense</i>	Cape Wolf Snake	Least Concern (SARCA 2014)
Lamprophiidae	<i>Psammophis brevirostris</i>	Short-snouted Grass Snake	Least Concern (SARCA 2014)
Lamprophiidae	<i>Psammophis subtaeniatus</i>	Western Yellow-bellied Sand Snake	Least Concern (SARCA 2014)
Lamprophiidae	<i>Psammophylax tritaeniatus</i>	Striped Grass Snake	Least Concern (SARCA 2014)
Leptotyphlopidae	<i>Leptotyphlops scutifrons scutifrons</i>	Peters' Thread Snake	
Scincidae	<i>Mochlus sundevallii</i>	Sundevall's Writhing Skink	Least Concern (SARCA 2014)
Scincidae	<i>Panaspis wahlbergii</i>	Wahlberg's Snake-eyed Skink	Least Concern (SARCA 2014)
Scincidae	<i>Trachylepis punctatissima</i>	Speckled Rock Skink	Least Concern (SARCA 2014)

Family	Scientific name	Common name	Red list category
Scincidae	<i>Trachylepis punctulata</i>	Speckled Sand Skink	Least Concern (SARCA 2014)
Scincidae	<i>Trachylepis sp. (Transvaal varia)</i>	Skink sp. 1	
Scincidae	<i>Trachylepis varia sensu lato</i>	Common Variable Skink Complex	Least Concern (SARCA 2014)
Testudinidae	<i>Stigmochelys pardalis</i>	Leopard Tortoise	Least Concern (SARCA 2014)
Varanidae	<i>Varanus albigularis albigularis</i>	Rock Monitor	Least Concern (SARCA 2014), NWBA Schedule 2
Varanidae	<i>Varanus niloticus</i>	Water Monitor	Least Concern (SARCA 2014), NWBA Schedule 2
Viperidae	<i>Bitis arietans arietans</i>	Puff Adder	Least Concern (SARCA 2014)

Amphibian species found in 2436CD, 2526AA, 2526AB, 2526AC and 2526AD (FrogMAP)

Family	Scientific name	Common name	Red list category
Brevicipitidae	<i>Breviceps adspersus</i>	Bushveld Rain Frog	Least Concern
Bufo	<i>Poyntonophrynus vertebralis</i>	Southern Pygmy Toad	Least Concern
Bufo	<i>Schismaderma carens</i>	Red Toad	Least Concern
Bufo	<i>Sclerophrys sp.</i>		
Bufo	<i>Sclerophrys capensis</i>	Raucous Toad	Least Concern
Bufo	<i>Sclerophrys garmani</i>	Olive Toad	Least Concern (IUCN, 2016)
Bufo	<i>Sclerophrys gutturalis</i>	Guttural Toad	Least Concern (IUCN, 2016)
Bufo	<i>Sclerophrys poweri</i>	Power's Toad	Least Concern
Hyperoliidae	<i>Kassina senegalensis</i>	Bubbling Kassina	Least Concern
Microhylidae	<i>Phrynomantis bifasciatus</i>	Banded Rubber Frog	Least Concern
Phrynobatrachidae	<i>Phrynobatrachus natalensis</i>	Snoring Puddle Frog	Least Concern (IUCN, 2013)
Pipidae	<i>Xenopus laevis</i>	Common Platanna	Least Concern
Ptychadenidae	<i>Ptychadena anchietae</i>	Plain Grass Frog	Least Concern
Ptychadenidae	<i>Ptychadena mossambica</i>	Broadbanded Grass Frog	Least Concern
Pyxicephalidae	<i>Amietia delalandii</i>	Delalande's River Frog	Least Concern (2017)
Pyxicephalidae	<i>Cacosternum boettgeri</i>	Common Caco	Least Concern (2013)
Pyxicephalidae	<i>Pyxicephalus edulis</i>	African Bull Frog	Least Concern
Pyxicephalidae	<i>Tomopterna cryptotis</i>	Tremelo Sand Frog	Least Concern
Pyxicephalidae	<i>Tomopterna natalensis</i>	Natal Sand Frog	Least Concern
Rhacophoridae	<i>Chiromantis xerampelina</i>	Southern Foam Nest Frog	Least Concern (2013)

Other invertebrate species occurring in QDS

Family	Scientific name	Common name	Red list category
Dungbeetles			
Scarabaeidae	<i>Caccobius ferrugineus</i>		NWBA Schedule 2
Scarabaeidae	<i>Catharsius ulysses</i>		NWBA Schedule 2
Scarabaeidae	<i>Chalconotus convexus</i>		NWBA Schedule 2
Scarabaeidae	<i>Copris amyntor</i>		NWBA Schedule 2
Scarabaeidae	<i>Copris denticulatus</i>		NWBA Schedule 2
Scarabaeidae	<i>Copris elphenor</i>		NWBA Schedule 2
Scarabaeidae	<i>Copris evanidus</i>		NWBA Schedule 2
Scarabaeidae	<i>Copris obesus</i>		NWBA Schedule 2
Scarabaeidae	<i>Digitonthophagus gazella</i>		NWBA Schedule 2
Scarabaeidae	<i>Garreta nitens</i>		NWBA Schedule 2
Scarabaeidae	<i>Gymnopleurus humeralis</i>		NWBA Schedule 2
Scarabaeidae	<i>Heliocopris japedus</i>		NWBA Schedule 2
Scarabaeidae	<i>Heliocopris neptunus</i>		NWBA Schedule 2
Scarabaeidae	<i>Liatongus militaris</i>		NWBA Schedule 2
Scarabaeidae	<i>Metacatharsius troglodytes</i>		NWBA Schedule 2
Scarabaeidae	<i>Onitis uncinatus</i>		NWBA Schedule 2
Scarabaeidae	<i>Onitis viridulus</i>		NWBA Schedule 2
Scarabaeidae	<i>Onthophagus apiciosus</i>		NWBA Schedule 2
Scarabaeidae	<i>Onthophagus bicavifrons</i>		NWBA Schedule 2

Family	Scientific name	Common name	Red list category
Scarabaeidae	<i>Onthophagus bovinus</i>		NWBA Schedule 2
Scarabaeidae	<i>Onthophagus ebenus</i>		NWBA Schedule 2
Scarabaeidae	<i>Onthophagus vinctus</i>		NWBA Schedule 2
Scarabaeidae	<i>Scarabaeus sp.</i>		NWBA Schedule 2
Scarabaeidae	<i>Scarabaeus subaeneus</i>		NWBA Schedule 2
Odonata			
Libellulidae	<i>Brachythemis leucosticta</i>	Southern Banded Groundling	LC
Libellulidae	<i>Diplacodes luminans</i>	Barbet Percher	LC
Libellulidae	<i>Trithemis arteriosa</i>	Red-veined Dropwing	LC
Libellulidae	<i>Trithemis kirbyi</i>	Orange-winged Dropwing	LC
Lacewing			
Ascalaphidae	<i>Tmesibasis laceratus</i>	Owlfly	
Myrmeleontidae	<i>Banyutus lethalis</i>		
Myrmeleontidae	<i>Centroclisis sp.</i>		
Myrmeleontidae	<i>Creoleon diana</i>		
Myrmeleontidae	<i>Cymothales poultoni</i>		
Myrmeleontidae	<i>Hagenomyia tristis</i>		
Myrmeleontidae	<i>Myrmeleon doralice</i>		
Myrmeleontidae	<i>Myrmeleon lanceolatus</i>		
Myrmeleontidae	<i>Palpares sobrinus</i>		
Scorpions			
Buthidae	<i>Parabuthus transvaalicus</i>		
Buthidae	<i>Uroplectes carinatus</i>		
Buthidae	<i>Uroplectes triangulifer</i>		
Buthidae	<i>Uroplectes vittatus</i>		
Hormuridae	<i>Hadogenes gracilis</i>		
Hormuridae	<i>Hadogenes troglodytes</i>		
Scorpionidae	<i>Opisthophthalmus glabrifrons</i>		NWBA Schedule 2, TOPS
Scorpionidae	<i>Opisthophthalmus pugnax</i>		NWBA Schedule 2, TOPS