



# Biodiversity Assessment Mortimer Smelter

## North West Province

April 2017

### REFERENCE

Mortimer

### CLIENT

WSP

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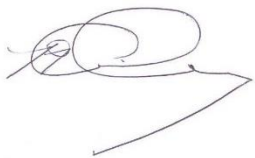

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Report Name	Biodiversity Assessment Mortimer Smelter	
Reference	<b>Mortimer</b>	
Submitted to	<b>WSP</b>	
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## EXECUTIVE SUMMARY

The Biodiversity Company was appointed by WSP to conduct a baseline biodiversity (fauna & flora) assessment as part of the Appendix 6 Level Environmental Impact Assessment (EIA), in the North West Province.

The assessment focussed on the proposed upgrading of an existing road, as well as the clearing of an area to make provision for a contractor's camp. The biodiversity related field surveys were conducted on the 4<sup>th</sup> April 2017.

This report, after taking into consideration the findings and recommendation provided by the specialist herein, should inform and guide the Environmental Assessment Practitioner (EAP) and regulatory authorities, enabling informed decision making, as to the ecological viability of the proposed project.

The following conclusions were reached based on the results of this assessment:

- The Mortimer Smelter site is situated in the Dwaalboom Thornveld (SVcb1) vegetation community. This vegetation community was listed by Mucina & Rutherford (2006) as Least Concern (LC);
- A list of plant species of conservation concern was compiled based on the POSA database. Three (3) plant species of conservation concern are expected to occur within QDS 2427CC. No SA endemic plant species are expected. The likelihood of occurrence of these plant species was assessed based on their known habitat preferences and found to be low;
- Based on this assessment it can be concluded that the proposed development is unlikely to impact on any aquatic or terrestrial Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs);
- The area surrounding the project area is extensively developed, including industry, mining, bulk services and urbanisation;
- The most significant anthropogenic impacts identified on site included:
  - Loss of habitat due to the encroaching developments;
  - Habitat fragmentation;
  - Dumping of slag and tailings; and
  - The presence of alien invasive plant species;
- Two vegetation communities were recorded on the site namely disturbed Turf-thornveld and wetlands. The vegetation communities associated with the proposed road upgrade and construction camp areas comprise the disturbed Turf-thornveld and adjoins the wetland areas;
- The importance and sensitivity of the plant communities associated with the proposed road upgrade and contractors camp site was regarded as low due to the absence of plant species of conservation concern, the high degree of anthropogenic disturbance and the prevalence of alien invasive plant species.;



- One category 1b alien invasive plant species were recorded on the site and must therefore be removed by implementing an alien invasive plant management programme in compliance of section 75 of the National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA);
- Although no faunal species of concern were recorded during the survey, the likelihood of species occurring on the site was rated as good;
- Despite being disturbed the significance of the loss of the Turf-thornveld was rated as moderately significant prior to mitigation;
- Construction related impacts on fauna were rated as having a high significance due to potential presence of species of conservation concern.

An impact statement is required as per the NEMA regulations with regards to the proposed development.

Considering the above-mentioned conclusions, it is the opinion of the specialist that the project be favourably considered but that all mitigation measures should be strictly adhered to.



## Table of Contents

1	INTRODUCTION .....	5
1.1	Terms of Reference .....	5
2	LIMITATIONS .....	5
3	KEY LEGISLATIVE REQUIREMENTS .....	5
4	PROJECT AREA .....	6
4.1	North West Biodiversity Sector Plan (READ, 2015).....	7
4.2	National Biodiversity Assessment (NBA, 2011).....	9
4.3	National Freshwater Ecosystem Priority Area (NFEPA) Status .....	9
5	METHODOLOGY.....	11
5.1	Desktop Assessment .....	11
5.2	Field Survey.....	12
5.2.1	Vegetation Assessment .....	12
5.2.2	Faunal Assessment .....	12
6	RESULTS & DISCUSSION.....	13
6.1	Desktop Assessment .....	13
6.1.1	Vegetation Assessment .....	13
6.1.2	Faunal Assessment .....	15
6.2	Field Survey.....	19
6.2.1	Vegetation Assessment .....	19
6.2.2	Faunal Assessment .....	21
7	IMPACT ASSESSMENT .....	22
7.1	Methodology .....	22
7.2	Identification of Impacts .....	23
7.2.1	Construction Phase.....	23
7.3	Assessment of Significance .....	24
7.3.1	Construction Phase.....	24
7.4	Potential mitigation measures .....	27
7.4.1	Mitigation Measures for Impacts on Vegetation Communities .....	27
7.4.2	Mitigation Measures for Impacts on Faunal Communities .....	27



8	CONCLUSIONS.....	27
9	IMPACT STATEMENT .....	28
10	REFERENCES.....	28

## Tables

Table 1: Plant species of conservation concern expected to occur in grid square 2427CC as well as the conservation status of each (POSA, 2017; SANBI, 2017).....	14
Table 2: List of bird species of regional or global conservation importance that are expected to occur in QDS 2628AD as well as their likelihood of occurrence in the project area (SABAP2, 2017, ESKOM, 2014; IUCN, 2017).....	15
Table 3: List of mammal species of conservation concern that may occur in the project area as well as their global and regional conservation statuses and the likelihood of occurrence in the project area (IUCN, 2017; SANBI, 2016).....	17
Table 5: Bird species observed in the project area during the April 2017 survey .....	21
Table 7: Likelihood descriptors.....	22
Table 8: Consequence Descriptors .....	22
Table 9: Significance Rating Matrix .....	23
Table 10: Assessment of significance of potential impacts on vegetation communities associated with the proposed road upgrade and contractors camp construction at Mortimer Smelter pre- and post- mitigation .....	25
Table 11: Assessment of significance of potential impacts on faunal communities associated with the proposed road upgrade and contractors camp construction at Mortimer Smelter pre- and post- mitigation.....	25

## Figures

Figure 1: The location of the proposed road upgrade and proposed contractors camp at Mortimer smelter .....	6
Figure 2: Project area superimposed on the Aquatic CBA map provided by READ (2015)....	8
Figure 3: Project area superimposed on the Terrestrial CBA map provided by READ (2015) 9	
Figure 4: Mortimer Smelter project area in relation to river FEPAs .....	10
Figure 5: Mortimer Smelter project area in relation to wetland FEPAs.....	11
Figure 6: Mortimer Smelter project area showing the vegetation type based on the Vegetation Map of South Africa, Lesotho & Swaziland (Mucina & Rutherford, 2006) .....	13





## DECLARATION

I, Peter Karl Kimberg declare that:

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



Peter Kimberg

B. Sc. Honours Zoology

The Biodiversity Company

27 March 2017





## 1 INTRODUCTION

The Biodiversity Company was appointed by WSP to conduct a baseline biodiversity (fauna & flora) assessment as part of the Appendix 6 Level Environmental Impact Assessment (EIA), in the North West Province.

The assessment focussed on the proposed upgrading of an existing road, as well as the clearing of an area to make provision for a contractor's camp. The biodiversity related field surveys were conducted on the 4<sup>th</sup> April 2017.

This report, after taking into consideration the findings and recommendation provided by the specialist herein, should inform and guide the Environmental Assessment Practitioner (EAP) and regulatory authorities, enabling informed decision making, as to the ecological viability of the proposed project.

### 1.1 Terms of Reference

The aim of the study was to undertake and compile a biodiversity baseline and impact assessment for the proposed development.

This biodiversity assessment was informed by the North West Biodiversity Sector Plan (READ, 2015).

## 2 LIMITATIONS

The following limitation should be noted for the study:

- Due to the disturbed nature of the site, the limited project footprint and time constraints, intensive sampling and trapping was not implemented for this study. Despite this, the confidence of the findings is high due to the status of the project area, the extent of area ground truthed for the study and the information available to supplement the study;
- The extent of habitat units that will be directly affected by the proposed project was ground truthed and
- No alternatives were identified for the proposed development.

## 3 KEY LEGISLATIVE REQUIREMENTS

The following legal framework and requirements apply to the study:

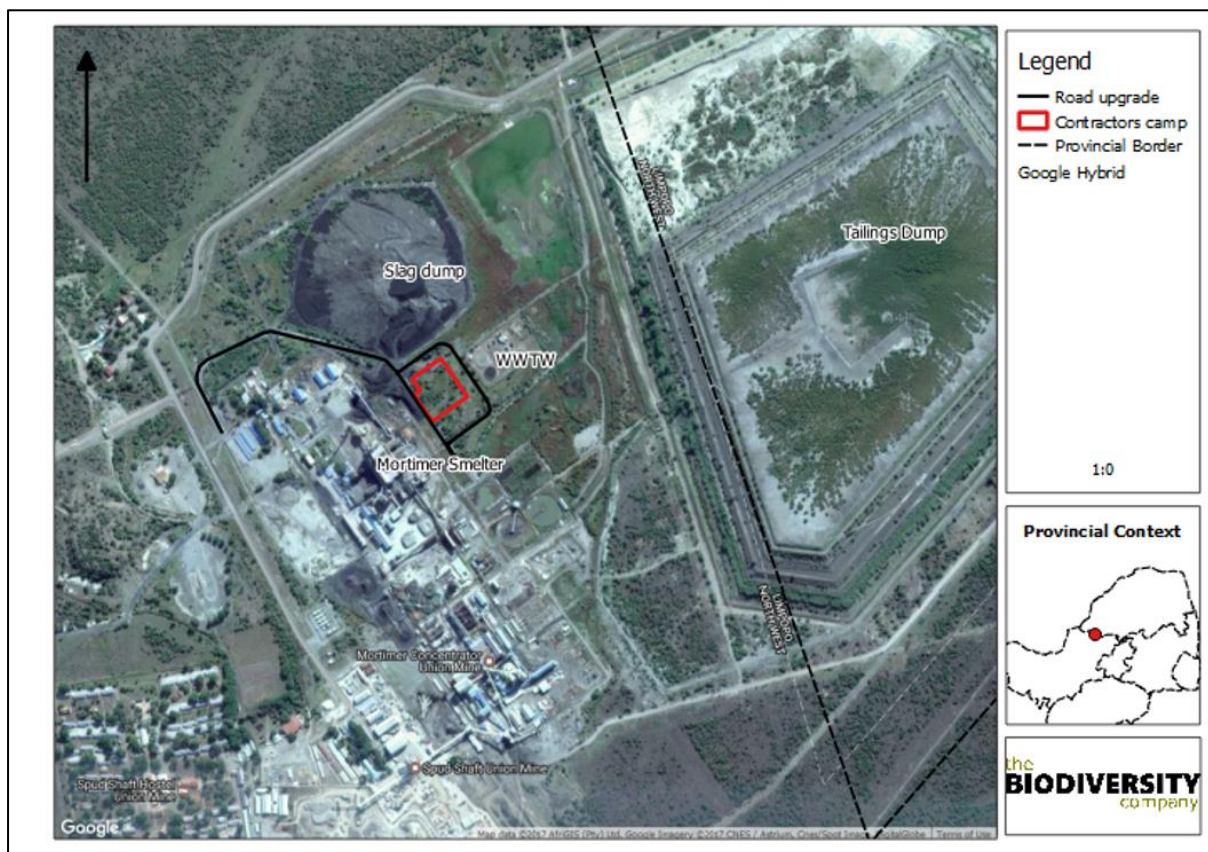
- The National Environmental Management: Biodiversity Act (NEM:BA) No. 10 of 2004: specifically, the management and conservation of biological diversity within the RSA and of the components of such biological diversity; and
- North West Province Biodiversity Sector Plan (READ, 2015).



## 4 PROJECT AREA

The Mortimer Smelter is situated in the North West Province in the vicinity of the towns of Mantserre, Swartklip, Sefikile and Ga-Ramosidi, and approximately 20 km north west of the Pilanesberg National Park. The site is very near to the border with the Limpopo Province. The proposed development consists of an upgrade of an existing road, which is situated just to the north of the Mortimer smelter, and clearing of an area immediately adjacent to the smelter (Figure 1). The area to be cleared is approximately 2.2 hectares in size, including road surfaces. The proposed road upgrade is approximately 700 m in length and comprises an existing road that is situated to the north of the smelter and which passes between the smelter and the slag dump.

The site is situated in the Bushveld Basin ecoregion, the Croc (West) and Marico Water Management Area (WMA\_03) and the Savanna Biome. The site is situated within Quarter Degree Square (QDS) 2427CC.



**Figure 1: The location of the proposed road upgrade and proposed contractors camp at Mortimer smelter**



#### **4.1 North West Biodiversity Sector Plan (READ, 2015)**

The North West Biodiversity Sector Plan was completed in the 2015/16 financial year (READ, 2015). It is based on biodiversity planning analyses performed and data sets available at this time (READ, 2015). 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 (READ, 2015).

The North West Biodiversity Sector Plan identifies aquatic and terrestrial priority areas, identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs). Each category of priority area has specific land use guidelines. Critical Biodiversity Areas (CBAs) are parts of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services (READ, 2015).

Ecological Support Areas (ESAs) are areas that are not essential for meeting biodiversity representation targets (thresholds), but which nevertheless play an important role in supporting the ecological functioning of CBAs and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration (READ, 2015). The degree or extent of restriction on land use and resource use in these areas may be lower than that recommended for CBAs (READ, 2015).

The proposed project area does not overlap with any aquatic CBAs or ESAs (Figure 2). The nearest aquatic CBA is situated approximately 1.4 km north of the project area (Figure 2). The nature of that CBA is unclear particularly as it appears to overlap with a mine and consists of an isolated patch with no connectivity to other aquatic CBAs or features.

The project area also doesn't overlap with any terrestrial CBAs or ESAs (Figure 3). The nearest terrestrial CBAs are situated approximately 2.8 km south-west of the site.

Based on this assessment it can be concluded that the proposed development is unlikely to impact on any aquatic or terrestrial CBAs or ESAs.



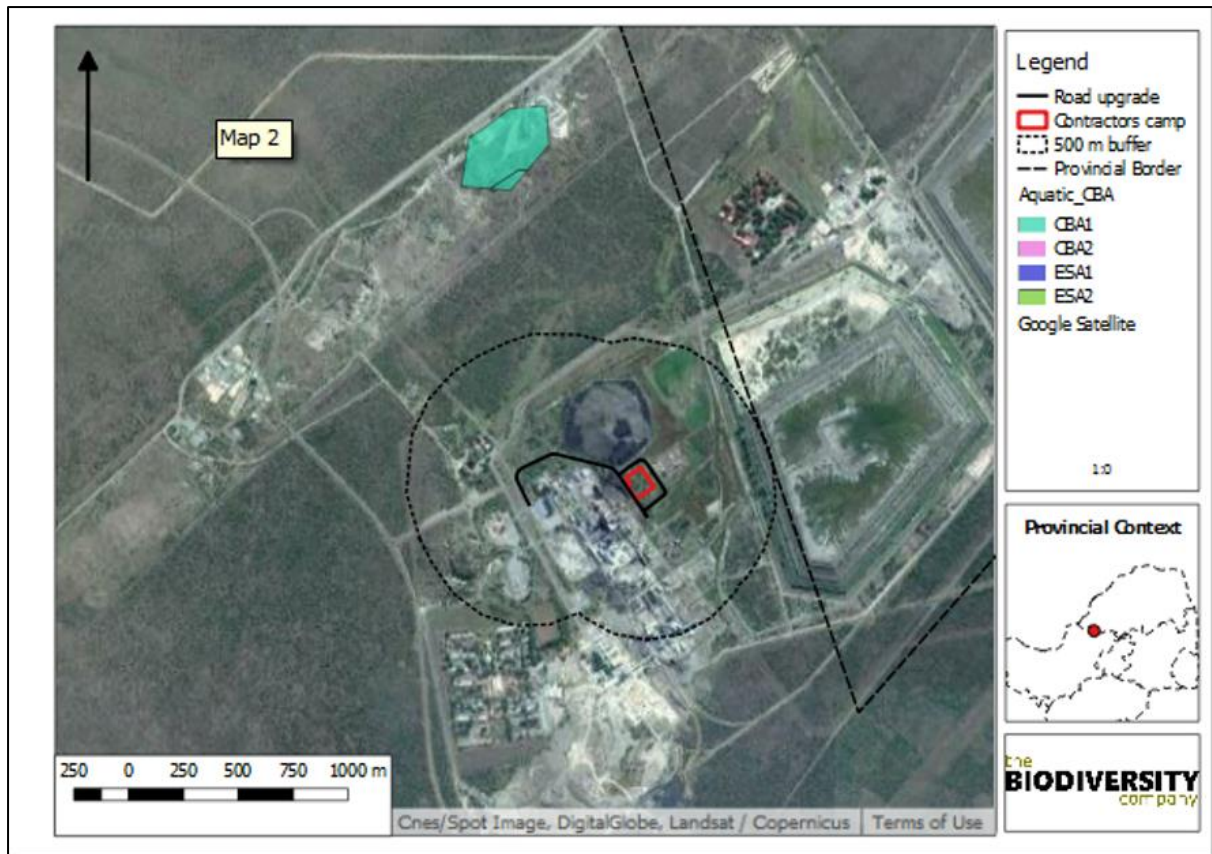
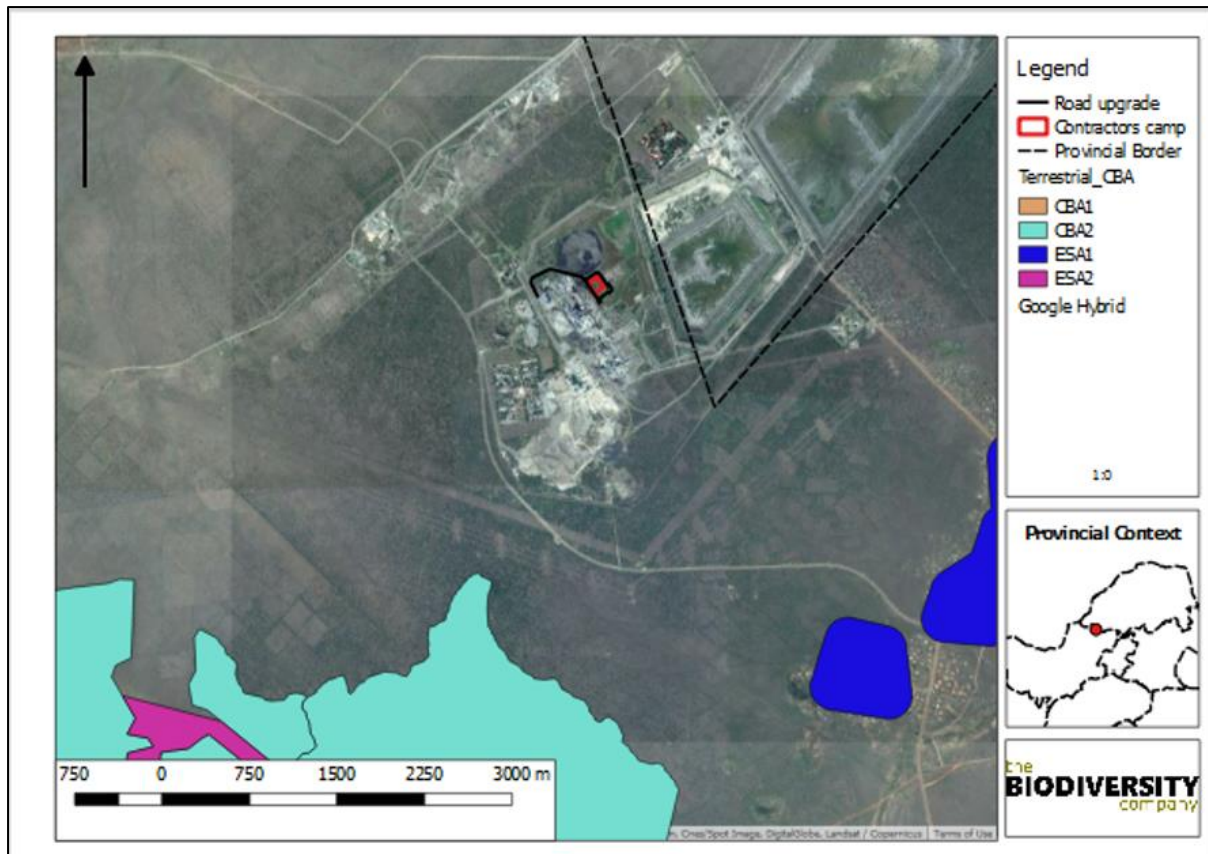


Figure 2: Project area superimposed on the Aquatic CBA map provided by READ (2015)





**Figure 3: Project area superimposed on the Terrestrial CBA map provided by READ (2015)**

#### 4.2 National Biodiversity Assessment (NBA, 2011)

The National Biodiversity Assessment (NBA) was completed as collaboration between the South African National Biodiversity Institute (SANBI), the Department of Environmental Affairs and stakeholders, scientists and biodiversity management experts throughout the country over a three-year period (Driver et al., 2012).

The purpose of the NBA is to assess the state of South Africa's biodiversity with a view to understanding trends over time and informing policy and decision-making across a range of sectors (Driver et al., 2012).

The two headline indicators assessed in the NBA are ecosystem threat status and ecosystem protection level (Driver et al., 2012). The project area is situated in an environment which is listed as Least Concern (LC) in terms of threat and poorly protected in terms of protection level.

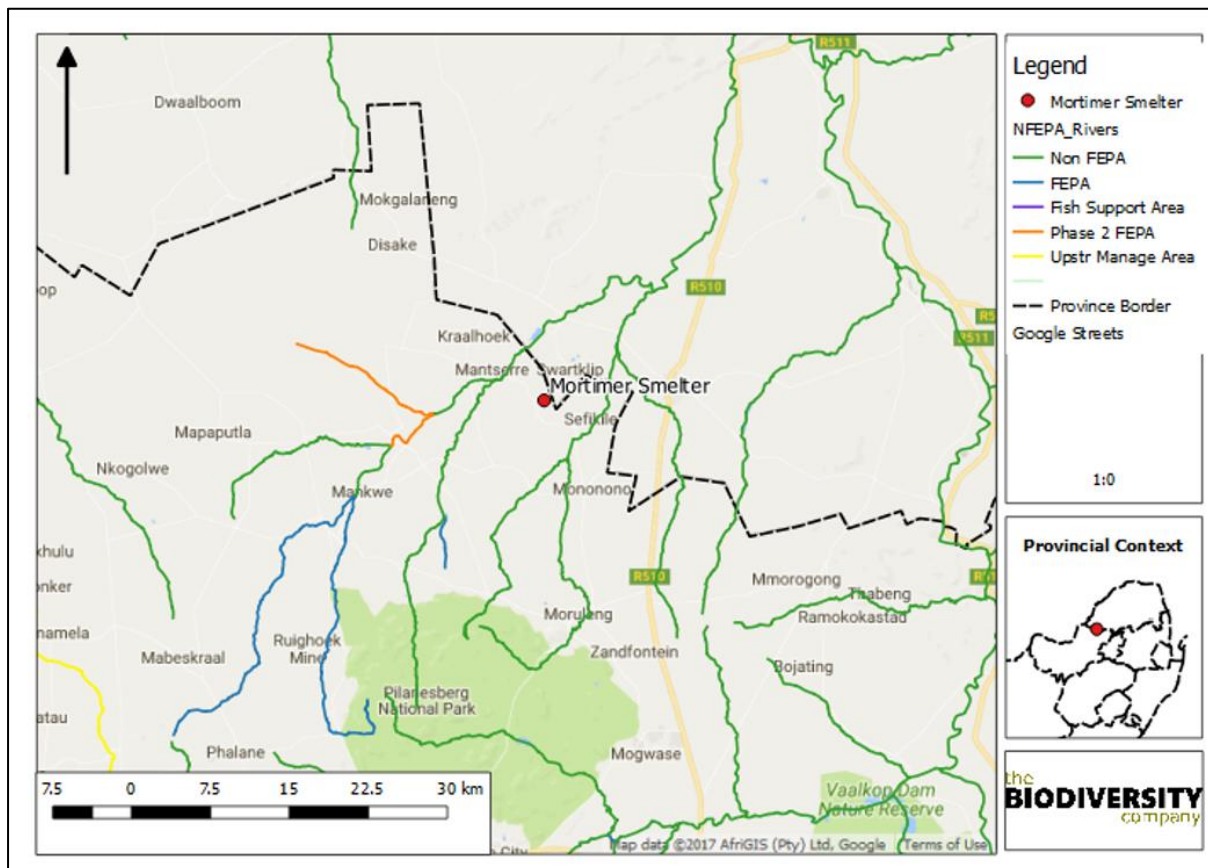
#### 4.3 National Freshwater Ecosystem Priority Area (NFEPA) Status

In an attempt to better conserve aquatic ecosystems, South Africa has recently categorised its river systems according to set ecological criteria (i.e. ecosystem representation, water yield, connectivity, unique features, and threatened taxa) to identify Freshwater Ecosystem Priority Areas (FEPAs) (Driver et al. 2011) The FEPAs are intended to be conservation support tools



and envisioned to guide the effective implementation of measures to achieve the National Environment Management Biodiversity Act (NEM:BA) biodiversity goals (Nel et al. 2011).

Figure 4 shows the location of the Mortimer Smelter project area in relation to river FEPAs. The site is situated in the catchment of the Bierspruit, perched in-between the Bofule and Sefathlane rivers. Neither of these rivers are classified as FEPAs, nor is the downstream Bierspruit a FEPA (Figure 4).



**Figure 4: Mortimer Smelter project area in relation to river FEPAs**

Figure 5 shows the location of the project area in relation to the wetland FEPAs. Based on the wetland FEPA map, there are wetlands on the eastern boundary of the smelter site (Figure 5). As can be seen from Figure 5, these non FEPA wetlands are situated within the 500 m buffer of the proposed development. In reality, this wetland system is more extensive than shown by the wetland FEPA shapefile, a desktop delineation was conducted of this wetland using Google Earth imagery and this is included in Figure 5.

Based on the location of the project area in relation to aquatic and wetland FEPAs, it can be concluded that the development is unlikely to impact on any priority areas.

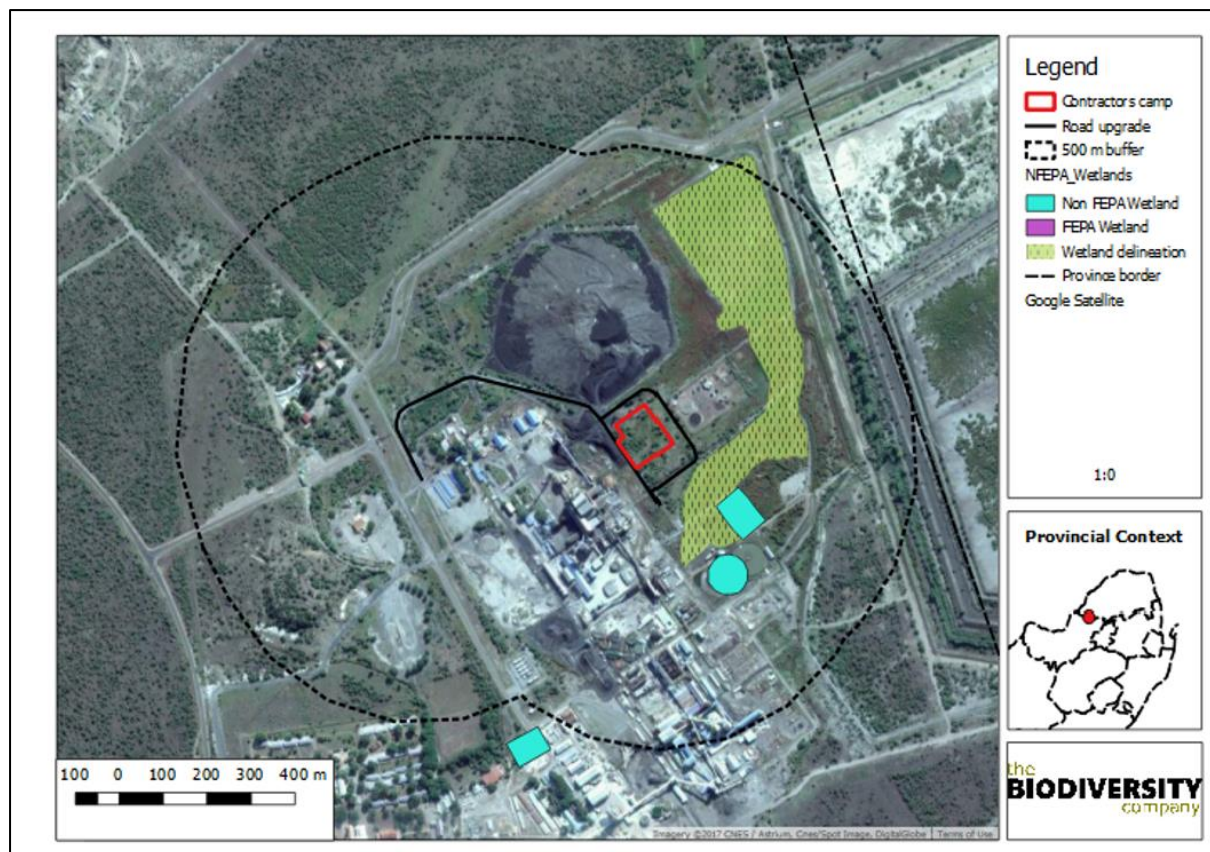


Figure 5: Mortimer Smelter project area in relation to wetland FEPAs

## 5 METHODOLOGY

### 5.1 Desktop Assessment

The requirements of this assessment served to combine aspects of the regional vegetation community (obtained from Mucina and Rutherford 2006) with the field study in order to formulate a series of conclusions and subsequent recommendations. The following datasets and sources were reviewed for the study:

- The Vegetation of South Africa, Lesotho & Swaziland (Mucina & Rutherford, 2006);
- The Southern Africa Bird Atlas Project (SABAP2, 2017) and BirdLife South Africa website (2017);
- Mammal information was referenced from the Animal Demography Unit (ADU, 2016), Skinner & Chimimba (2005) and the IUCN spatial database (IUCN, 2017); and
- Reptiles and amphibians were referenced from ADU (2016), Bates et al. (2014), Du Preez and Carruthers (2009) and the IUCN spatial database (IUCN, 2017) respectively.

The evaluation of species of concern was considered after the field study which served to identify their potential for occurrence. Therefore, all species identified under the above-



mentioned references were not necessarily analysed in detail. Plants were identified using Van Oudtshoorn (2004) and Van Wyk & Van Wyk (1997).

The verification of the presence of red and orange listed plant species was one of the primary ecological requirements of the floral assessment.

## 5.2 Field Survey

A field survey was conducted on the 4<sup>th</sup> April 2017 by 2 ecologists where the floral and faunal communities in the project area were assessed. The timing of the study represented late wet-season conditions which were sub-optimal. The project was ground-truthed on foot, which included spot checks in pre-selected areas to validate desktop data. Photographs were recorded during the site visit.

The fieldwork attempted to classify the fauna, flora and habitats, with emphasis on recording the actual and potential presence of Red Data species (also referred to as Red-Listed and Orange-Listed species), which are species of conservation concern in South African (either classified as threatened by the IUCN (2017), protected by NEMBA (2014) or indeed other legislations applicable provincially or nationally).

### 5.2.1 Vegetation Assessment

The survey included the following:

- A survey for Red and Orange Data plant species;
- Vegetation units will be identified, classified and delineated;
- Habitat types will be classified and delineated;
- The survey will be conducted in consultation with local authorities who have information to be considered; and
- The survey area will include terrestrial ecosystems within 500 m of the proposed development.

### 5.2.2 Faunal Assessment

The survey included the following:

- Compilation of expected species lists;
- A survey of the terrestrial habitats within the proposed development area (where applicable);
- Compilation of identified species lists;
- Identification of any Red Data or listed species present or potentially occurring in the area;
- A proximity assessment to any protected or ecologically important areas;
- Emphasis will be placed on the probability of occurrence of species of provincial, national and international conservation importance.





## 6 RESULTS & DISCUSSION

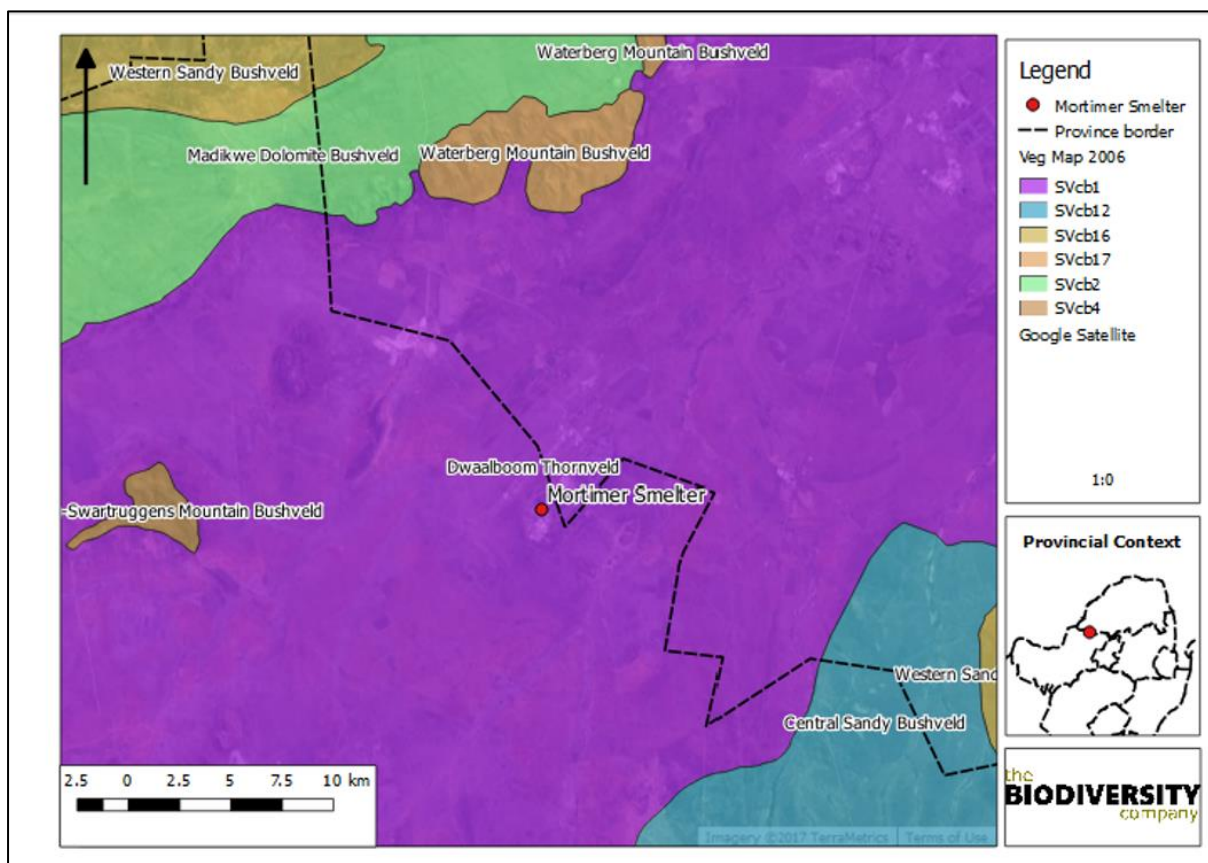
### 6.1 Desktop Assessment

#### 6.1.1 Vegetation Assessment

The Mortimer Smelter site is situated in the Savanna biome. The savanna vegetation of South Africa represents the southernmost extension of the most widespread biome in Africa (Mucina & Rutherford, 2006). Major macroclimatic traits that characterise the Savanna biome include:

- a) Seasonal precipitation; and
- b) (Sub) tropical thermal regime with no or usually low incidence of frost (Mucina & Rutherford, 2006).

Most savanna vegetation communities are characterised by a herbaceous layer dominated by grasses and a discontinuous to sometimes very open tree layer (Mucina & Rutherford, 2006). The Savanna biome comprises many different vegetation types. The Mortimer Smelter site is situated in the Dwaalboom Thornveld (SVcb1) vegetation community (Figure 6).



**Figure 6: Mortimer Smelter project area showing the vegetation type based on the Vegetation Map of South Africa, Lesotho & Swaziland (Mucina & Rutherford, 2006)**



Dwaalboom Thornveld occurs on black clay soils in the North West and Limpopo Provinces (Mucina & Rutherford, 2006). This vegetation community is characterised by layers 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 grasses (Mucina & Rutherford, 2006). Approximately 6% of this vegetation community is statutorily conserved, mostly in the Madikwe Game Reserve and by 2006, 14% had already been transformed. The conservation status of this vegetation community was listed by Mucina & Rutherford (2006) as Least Concern (LC).

Based on the Plants of Southern Africa (POSA, 2017) database, 387 plant species are expected to occur in topographical grid square 2427CC. The list of expected plant species is provided in Appendix A.

### 6.1.1.1 Plant Species of Conservation Concern

A list of plant species of conservation concern was compiled based on the POSA database (POSA, 2017). Three (3) plant species of conservation concern are expected to occur within QDS 2427CC (Table 1). No SA endemic plant species are expected to occur in QDS 2427CC (Table 1). The likelihood of occurrence of these species was assessed based on their known habitat preferences.

*Ilex mitis* (Cape holly) occurs throughout South Africa with the exception of the Northern Cape. Beyond South Africa's borders its range extends to Ethiopia and also Madagascar. Populations of this species have declined in certain parts of its range due to harvesting of bark for the medicinal plant trade (SANBI, 2017). This plant species is typically associated with riparian habitats, forests and thickets. Its presence in the project area is therefore regarded as unlikely.

*Ledebouria atrobrunnea* is restricted to plains north of Pilanesberg to Rustenburg and Borakalalo (SANBI, 2017). Due to this restricted range, this species is listed as Vulnerable (VU) by some sources, it is however locally abundant and is resilient to anthropogenic impacts such as overgrazing (SANBI, 2017). It occurs in rocky areas and quartzitic outcrops and therefore its presence in the project area is regarded as unlikely.

*Myrothamnus flabellifolius* occurs in Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga and North West Provinces. It usually occurs in shallow soil on sunny rocky hills or along cracks and crevices in rocks, its presence in the project area is therefore regarded as unlikely.

**Table 1: Plant species of conservation concern expected to occur in grid square 2427CC as well as the conservation status of each (POSA, 2017; SANBI, 2017)**

Species	Threat status	SA Endemic
<i>Ilex mitis</i> (L.) Radlk. var. <i>mitis</i>	<b>Declining</b>	No
<i>Ledebouria atrobrunnea</i> S.Venter	<b>VU</b>	No
<i>Myrothamnus flabellifolius</i> Welw.	<b>DDT*</b>	No

\* Data Deficient



## 6.1.2 Faunal Assessment

### 6.1.2.1 Avifauna

Based on the South African Bird Atlas Project (SABAP, Version 2) 250 bird species are expected to occur in pentad 2455\_2705. The full list of potential bird species is provided in Appendix B.

Of these bird species, 6 (2.4%) are listed as being of conservation importance either on a regional or global scale (Table 2).

The expected bird species list includes:

- Three (3) species that are listed as Endangered (EN) on a regional basis;
- One (1) species that is listed as Vulnerable (VU) on a regional basis; and
- Two (2) species that are listed as Near Threatened (NT) on a regional basis (Table 2).

On a global scale, 1 species is listed as CR and 1 as EN (Table 2).

**Table 2: List of bird species of regional or global conservation importance that are expected to occur in QDS 2628AD as well as their likelihood of occurrence in the project area (SABAP2, 2017, ESKOM, 2014; IUCN, 2017)**

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (Eskom, 2016)	Global (IUCN, 2017)	
<i>Gyps africanus</i>	Vulture, White-backed	EN	CR	Low
<i>Gyps coprotheres</i>	Vulture, Cape	EN	EN	Low
<i>Mycteria ibis</i>	Stork, Yellow-billed	EN	LC	Low
<i>Tyto capensis</i>	Grass-owl, African	VU	LC	Low
<i>Leptoptilos crumeniferus</i>	Stork, Marabou	NT	LC	Low
<i>Pterocles gutturalis</i>	Sandgrouse, Yellow-throated	NT	LC	Low

The 2 vulture species, *Gyps africanus* and *G. coprotheres*, are both listed as EN on a regional basis, whilst *G. africanus* is listed as CR on a global basis (Table 2).

*Gyps africanus* (White-backed vulture) occurs across sub-Saharan Africa, with the exception of the Congo basin (Birdlife, 2017). The precipitous decline in this species is attributed to habitat loss and conversion to agro-pastoral systems, declines in wild ungulate populations, hunting for trade, persecution, powerline collisions and poisoning (Birdlife, 2017). It is primarily a lowland species of open wooded savanna, particularly areas of Acacia and requires tall trees for nesting (IUCN, 2017).

*Gyps coprotheres* (Cape vulture) has a more restricted range and only occurs in Southern Africa. According to the IUCN (2017) a decrease in the availability of carrion (particularly during chick-rearing), inadvertent poisoning, electrocution on pylons or collision with cables,



loss of foraging habitat and unsustainable harvesting for traditional uses are the most factors contributing to the decline of this species. Although both vulture species are expected in pentad 2455\_2705, the absence of carrion suggests that they are very unlikely to occur in the project area.

*Mycteria ibis* (Yellow-billed stork) is listed as EN on a regional basis and LC on a global basis (Table 2). This species is migratory and has a large distributional range which includes much of sub-Saharan Africa. It is typically associated with freshwater ecosystems, especially wetlands and the margins of lakes and dams. Although there are wetlands within close proximity to the site, the absence of any records of this species in pentad 2455\_2705 over the course of SABAP2 (July 2007 to April 2017) suggests that the habitat is perhaps sub-optimal or more suitable habitat exists elsewhere.

*Tyto capensis* (Grass owl) is a habitat specialist and mainly restricted to the open, grassy habitats of marshes, wetlands and floodplains. Its distributional range includes Africa, south of the equator. Although the habitat suggests a moderate likelihood of occurrence of this species in this project area, only a single record of this species dating to 2008, exists for pentad 2455\_2705 over the course of SABAP2 (July 2007 to April 2017) suggesting that the habitat is perhaps sub-optimal and the likelihood of occurrence low.

*Leptoptilos crumeniferus* (Marabou stork) and *Pterocles gutturalis* (Yellow throated sandgrouse) are both listed as NT on a regional scale and LC on a global scale (Table 2). *Leptoptilos crumeniferus* is a carrion feeder that occurs in open dry savannas, grasslands, swamps, riverbanks, lake shores and receding pools. The absence of carrion suggests a low likelihood of occurrence of this species in the project area. There are 3 records of this species occurring in pentad 2455\_2705 between July 2007 to April 2017.

*Pterocles gutturalis* has an extremely large range that extends across Southern and East Africa. Populations of this species are declining due to ongoing habitat loss. Its preferred habitat is described as short grassy plains and cultivated fields. Although there are 7 records of this species in pentad 2455\_2705 over the period July 2007 to April 2017, most recently in 2015, the habitat in the project area is considered to be sub-optimal and the likelihood of occurrence low.

### 6.1.2.2 Mammals

The IUCN Red List Spatial Data (IUCN, 2017) lists 99 mammal species that could be expected to occur within the project area (Appendix C). Of these species, 17 are medium to large conservation dependant species, such as *Diceros bicornis* (Black rhinoceros), *Ourebia ourebi* (Oribi) and *Equus quagga* (Plains zebra) that in South Africa are restricted to protected areas such as game reserves. These species are therefore not expected to occur in the project area and have been excluded from the assessment.

Of the remaining 80 small to medium sized mammal species, 10 (13%) are listed as being of conservation concern on a regional or global basis (Table 3). The list of potential species includes 1 species that is listed as EN, 3 that are listed as VU and on a regional basis and 6 that are listed as NT on a regional scale (Table 3). On a global scale, 3 species are listed as VU and 2 as NT (Table 3).



**Table 3: List of mammal species of conservation concern that may occur in the project area as well as their global and regional conservation statuses and the likelihood of occurrence in the project area (IUCN, 2017; SANBI, 2016)**

Species	Common name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2017)	
<i>Clootis percivali</i>	Short-eared Trident Bat	EN	LC	Unknown
<i>Felis nigripes</i>	Black-footed Cat	VU	VU	Moderate to low
<i>Panthera pardus</i>	Leopard	VU	VU	Low
<i>Smutsia temminckii</i>	Temminck's Ground Pangolin	VU	VU	Low
<i>Aonyx capensis</i>	Cape Clawless Otter	NT	NT	Good
<i>Atelerix frontalis</i>	South African Hedgehog	NT	LC	Good
<i>Crocidura mariquensis</i>	Swamp Mush Shrew	NT	LC	Good
<i>Leptailurus serval</i>	Serval	NT	LC	Good
<i>Parahyaena brunnea</i>	Brown Hyaena	NT	NT	Moderate
<i>Poecilogale albinucha</i>	African Striped Weasel	NT	LC	Good

The expected mammal species of conservation concern are discussed separately below.

*Clootis percivali* (Percival's trident bat) is a poorly known species which is largely confined to southern Africa. It occurs in savanna areas where there is sufficient nearby cover in the form of caves and mine tunnels for day roosting. There are no records of this species in the project area, although being a relatively cryptic and poorly known species that is hardly surprising. Although the habitat is suitable, it is unknown whether suitable roosting sites exist for this species

*Felis nigripes* (Black-footed cat) is endemic to the arid regions of southern Africa. This species is naturally rare, has cryptic colouring is small in size and is nocturnal. These factors have contributed to a lack of information on this species. Given that the highest densities of this species have been recorded in the arid central Karoo region of South Africa, the habitat in the project area can be considered marginal at best and the likelihood of occurrence therefore moderate to low.

*Panthera pardus* (Leopard) has a wide distributional range across Africa and Asia, but populations have become reduced and isolated, and they are now extirpated from large portions of their historic range (IUCN, 2017). Impacts that have contributed to the decline in populations of this species include continued persecution by farmers, habitat fragmentation, increased illegal wildlife trade, excessive harvesting for ceremonial use of skins, prey base declines and poorly managed trophy hunting (IUCN, 2017). Although known to occur and persist outside of formally protected areas, the densities in these areas are considered to be low and the likelihood of occurrence in a highly-disturbed area such as the project area can be regarded as low.

*Smutsia temminckii* (Temminck's Ground Pangolin) is the most widespread African pangolin species (IUCN, 2017). Their inconspicuous nature and nocturnal habits have resulted in their abundance being historically underestimated throughout their range (IUCN, 2017). This



species inhabits savanna woodland in low-lying regions with moderate to dense scrub (IUCN, 2017). Although suitable habitats exist for this species, the high level of harvesting of this species outside of protected areas and naturally low density suggests that the likelihood of occurrence in the project area is considered to be low.

*Aonyx capensis* (Cape Clawless Otter) is the most widely distributed otter species in Africa (IUCN, 2017). This species is predominantly aquatic and it is seldom found far from water. Based on the confirmed availability of this habitat in the project area, together with this species' ability to persist in peri-urban areas, the likelihood of occurrence of this species occurring in the project area is considered to be good.

*Atelerix frontalis* (South African Hedgehog) has a tolerance of a degree of habitat modification and occurs in a wide variety of semi-arid and sub-temperate habitats (IUCN, 2017). The likelihood of occurrence of this species in the project area is considered to be good.

*Crocidura mariquensis* (Swamp Mush Shrew) has very specific habitat requirements. It occurs in close proximity to open water with a distinct preference for marshy ponds, and riverine and semi-aquatic vegetation such as reed beds (IUCN, 2017). It is considered to be common in suitable habitats. Based on the confirmed availability of this habitat type in the project area, the likelihood of occurrence of this species occurring in the project area is considered to be good.

*Leptailurus serval* (Serval) occurs widely through sub-Saharan Africa, with the exception of tropical rainforest and the Saharan desert (IUCN, 2017). In sub-Saharan Africa, Servals are found in well-watered savanna long-grass environments and are particularly associated with reedbeds and other riparian vegetation types (IUCN, 2017). Based on the confirmed availability of this habitat type in the project area, the likelihood of occurrence of this species occurring in the project area is good.

*Parahyaena brunnea* (Brown Hyaena) is endemic to southern Africa. This species occurs in dry areas, generally with annual rainfall less than 100 mm, particularly along the coast, semi-desert, open scrub and open woodland savanna. Given its known occurrence in the Pilanesberg National Park, together with its known ability to persist outside of formally protected areas the likelihood of occurrence of this species in the project area is moderate. The absence of carrion in the project area decreases the likelihood of occurrence of this species.

*Poecilogale albinucha* (African Striped Weasel) is usually associated with savanna habitats, although it probably has a wide habitat tolerance (IUCN, 2017). Due to its secretive nature, it is often overlooked in many areas. The likelihood of occurrence of this species in the project area is good.

### **6.1.2.3 Herpetofauna (reptiles & amphibians)**

Based on the IUCN Red List Spatial Data (IUCN, 2017) and the ReptileMap database provided by the Animal Demography Unit (ADU, 2017) 34 reptile species are expected to occur in the project area (Appendix D). None of the expected reptile species are listed as being of conservation concern either on a regional or global scale.

Based on the IUCN Red List Spatial Data (IUCN, 2017) and the AmphibianMap database provided by the Animal Demography Unit (ADU, 2017) 22 amphibian species are expected to



occur in the project area (Appendix D). Of the expected amphibian species, *Pyxicephalus adspersus* (Giant bullfrog) is listed as NT on a regional scale (Appendix D). None of the expected species are listed as being of conservation concern on a global scale.

## 6.2 Field Survey

### 6.2.1 Vegetation Assessment

The vegetation community in the project area was found to be highly disturbed with an associated high incidence of alien plant infestation.

The broad vegetation communities comprised of:

- Disturbed Turf-thornveld; and
- Wetland areas.

The disturbed turf-thornveld was found along the proposed road upgrade as well as in the proposed contractors camp site. The vegetation community was dominated by *Vachellia tortilis* (Umbrella Thorn) and *Vachellia nilotica* (Scented thorn) thornveld. *Ziziphus mucronata* (Buffalo Thorn) was very abundant whilst *Senegalia mellifera* (Black thorn) and *Dichrostachys cinerea* (Sickle bush) were also present but occurred more sporadically.

Broad-leaved tree species included: *Searsia pyroides* (Common wildcurrant), *Gymnosporia buxiolia* (Common spike thorn) and *Diospyros lycioides* subsp *sericea* (Bluebush).

Grass species included: *Setaria incrassata* (Vlei Bristle Grass), *Ischaemum afrum* (Turf grass), *Eragrostis rigidior*, *Heteropogon contours* (Spear grass), *Melinis repens*, *Bothriochloa insculpta* (Pinhole grass), *Urochloa mossambicensis* and *Panicum maximum* along the proposed road upgrade.

Alien invasive plant species were abundant in this area and included: *Tithonia rotundifolia* (Mexican sunflower), *Zinnia peruviana* (Jakobregop), *Melia azedarach* (Syringa) and *Tipuana tipu* (Tipu tree).

Forbs, shrubs and climbers included: *Asparagus cooperi* (Haakdoring), *Cucumis zeyheri*, *Sesbania bispinosa* (Spiny sesbania).

#### 6.2.1.1 Plant Species of Conservation Concern

No plant species of conservation concern were recorded during the April 2017 survey.

##### 6.2.1.1.1 Alien Invasive Plant Species

Declared weeds and invader plant species have the tendency to dominate or replace the canopy or herbaceous layer of natural ecosystems, thereby transforming the structure, composition and function of natural ecosystems. Therefore, it is important that these plants are controlled and eradicated by means of an eradication and monitoring programme. Some invader plants may also degrade ecosystems through superior competitive capabilities to exclude native plant species (Henderson, 2001).

The National Environmental Management: Biodiversity Act (NEMBA) is the most recent legislation pertaining to alien invasive plant species. In August 2014, the list of Alien Invasive Species was published in terms of the National Environmental Management: Biodiversity Act



(Act 10 of 2004) (Government Gazette No 78 of 2014). The Alien and Invasive Species Regulations were published in the Government Gazette No. 37886, 1 August 2014. The legislation calls for the removal and / or control of alien invasive plant species (Category 1 species). In addition, unless authorised thereto in terms of the National Water Act, 1998 (Act No. 36 of 1998), no land user shall allow Category 2 plants to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland. Category 3 plants are also prohibited from occurring within proximity to a watercourse.

Below is a brief explanation of the three categories in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA):

- Category 1a: Invasive species requiring compulsory control. Remove and destroy. Any specimens of Category 1a listed species need, by law, to be eradicated from the environment. No permits will be issued.
- Category 1b: Invasive species requiring compulsory control as part of an invasive species control programme. Remove and destroy. These plants are deemed to have such a high invasive potential that infestations can qualify to be placed under a government sponsored invasive species management programme. No permits will be issued.
- Category 2: Invasive species regulated by area. A demarcation permit is required to import, possess, grow, breed, move, sell, buy or accept as a gift any plants listed as Category 2 plants. No permits will be issued for Category 2 plants to exist in riparian zones.
- Category 3: Invasive species regulated by activity. An individual plant permit is required to undertake any of the following restricted activities (import, possess, grow, breed, move, sell, buy or accept as a gift) involving a Category 3 species. No permits will be issued for Category 3 plants to exist in riparian zones.

Note that according to the regulations, a person who has under his or her control a category 1b listed invasive species must immediately:

- a) notify the competent authority in writing
- b) take steps to manage the listed invasive species in compliance with:
  - i. section 75 of the Act;
  - ii. the relevant invasive species management programme developed in terms of regulation 4; and
  - iii. any directive issued in terms of section 73(3) of the Act.

One category 1b species was recorded and must therefore be removed by implementing an alien invasive plant management programme in compliance of section 75 of the Act as stated above. These species are: *Melia azedarach* (Syringa).

The importance and sensitivity of the plant communities associated with the proposed road upgrade and contractors camp site was regarded as low due to the absence of plant species of conservation concern, the high degree of anthropogenic disturbance and the prevalence of alien invasive plant species.





## 6.2.2 Faunal Assessment

### 6.2.2.1 Avifauna

A total of 18 bird species (7.2% of expected) were observed in the project area during the April 2017 survey (Table 4). The low species diversity was attributed primarily to the small size of the site and the degree of anthropogenic disturbance.

No regionally or globally important bird species were recorded during the survey (Table 4). The likelihood of occurrence of bird species of conservation concern is discussed in section 6.1.2 above.

**Table 4: Bird species observed in the project area during the April 2017 survey**

Species	Common Name	Conservation Status	
		Regional (Eskom, 2016)	Global (IUCN, 2017)
<i>Acridotheres tristis</i>	Myna, Common	Unlisted	LC
<i>Apus affinis</i>	Swift, Little	Unlisted	LC
<i>Bostrychia hagedash</i>	Ibis, Hadedda	Unlisted	LC
<i>Bubulcus ibis</i>	Egret, Cattle	Unlisted	LC
<i>Cisticola chiniana</i>	Cisticola, Rattling	Unlisted	LC
<i>Columba guinea</i>	Pigeon, Speckled	Unlisted	LC
<i>Corvinella melanoleuca</i>	Shrike, Magpie	Unlisted	LC
<i>Corvus albus</i>	Crow, Pied	Unlisted	LC
<i>Corythaixoides concolor</i>	Go-away-bird, Grey	Unlisted	LC
<i>Dendroperdix sephaena</i>	Francolin, Crested	Unlisted	LC
<i>Euplectes orix</i>	Bishop, Southern Red	Unlisted	LC
<i>Motacilla aguimp</i>	Wagtail, African Pied	Unlisted	LC
<i>Ploceus velatus</i>	Masked-weaver, Southern	Unlisted	LC
<i>Poicephalus meyeri</i>	Meyer's parrot	Unlisted	LC
<i>Streptopelia capicola</i>	Turtle-dove, Cape	Unlisted	LC
<i>Streptopelia senegalensis</i>	Dove, Laughing	Unlisted	LC
<i>Uraeginthus angolensis</i>	Waxbill, Blue	Unlisted	LC
<i>Urocolius indicus</i>	Mousebird, Red-faced	Unlisted	LC

### 6.2.2.2 Mammals

No mammal species were observed during the April 2017 survey. Given that many of the expected mammal species are small and cryptic species such as rodents the likelihood of occurrence of some small mammal species occurring in the project area is considered to be very good.

The likelihood of occurrence of mammal species of conservation concern occurring in the project area is discussed in section 6.1.2 above.

### 6.2.2.3 Herpetofauna (reptiles & amphibians)

No reptiles or amphibians were observed during the survey. Given the presence of wetland habitats the likelihood of reptiles and amphibians occurring on the site is good.



The likelihood of the NT amphibian species *Pyxicephalus adspersus* (Giant bullfrogs) occurring on the site is considered to be good.

## 7 IMPACT ASSESSMENT

### 7.1 Methodology

Potential impacts were evaluated against the data captured during the fieldwork to identify relevance to the study area. The relevant impacts were then subjected to a prescribed impact assessment methodology which is described below.

Impacts were assessed in terms of the construction and operational phases. The operational phase refers to that phase of the project where the township has been established and is fully occupied. Due to the nature of this development, the operational phase is assessed as lasting indefinitely and there is no closure or post- closure phases in this scenario.

Mitigation measures were only applied to impacts deemed relevant based on the impact analysis. The likelihood and consequence descriptors are presented in Table 5 and Table 6. The significance rating matrix is presented in Table 7.

**Table 5: Likelihood descriptors**

Probability of impact	Rating
Highly unlikely	1
Possible	2
Likely	3
Highly likely	4
Definite	5
Sensitivity of receiving environment	Rating
Ecology not sensitive/important	1
Ecology with limited	2
Ecology moderately sensitive/ /important	3
Ecology highly sensitive /important	4
Ecology critically sensitive /important	5

**Table 6: Consequence Descriptors**

Severity of impact	Rating
Insignificant / ecosystem structure and function unchanged	1
Small / ecosystem structure and function largely unchanged	2
Significant / ecosystem structure and function moderately altered	3
Great / harmful/ ecosystem structure and function largely altered	4
Disastrous / ecosystem structure and function seriously to critically altered	5



Spatial scope of impact	Rating
Activity specific/ < 5 ha impacted / Linear features affected < 100m	1
Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	2
Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features affected < 1000m	3
Regional within 5 km of the site boundary / < 2000ha impacted / Linear features affected < 3000m	4
Entire habitat unit / Entire system/ > 2000ha impacted / Linear features affected > 3000m	5
Duration of impact	Rating
One day to one month: Temporary	1
One month to one year: Short Term	2
One year to five years: Medium Term	3
Life of operation or less than 20 years: Long Term	4
Permanent	5

**Table 7: Significance Rating Matrix**

LIKELIHOOD (Frequency of activity + Frequency of impact)	CONSEQUENCE (Severity + Spatial Scope + Duration)														
	0	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	
3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	
5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	
6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	
7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	
8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	
9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	
10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	

## 7.2 Identification of Impacts

### 7.2.1 Construction Phase

#### 7.2.1.1 Potential Impacts on Vegetation Communities

The following potential impacts were considered on terrestrial vegetation communities:

- Loss destruction and/or eradication of plant species of conservation concern/ importance; and



### **7.2.1.2 Potential Impacts of Faunal Communities**

The following potential impacts on faunal communities were considered in this assessment:

- Loss and/or displacement of faunal species of conservation concern; and
- Loss of diversity of indigenous faunal communities.

## **7.3 Assessment of Significance**

### **7.3.1 Construction Phase**

#### **7.3.1.1 Significance of Impacts on Vegetation Communities**

Table 8 shows the significance of potential impacts associated with the development on vegetation communities before and after implementation of mitigation measures. Prior to implementation of mitigation measures the significance of impacts were rated as moderate (Table 8). Implementation of mitigation measures reduced the significance of potential impact on plant species of conservation concern to a low level (Table 8).

#### **7.3.1.2 Significance of Impacts on Faunal Communities**

The significance assessment of potential impacts associated with the development on faunal communities is presented in Table 9. Prior to implementation of mitigation measures both impacts were rated as high (Table 9). This is attributed to the high likelihood of occurrence of 6 faunal species of conservation concern. Implementation of mitigation measures reduced the significance of potential impact on faunal species of conservation concern to a moderate level (Table 9).



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**Table 8: Assessment of significance of potential impacts on vegetation communities associated with the proposed road upgrade and contractors camp construction at Mortimer Smelter pre- and post- mitigation**

Impact	Prior to mitigation						Post mitigation					
	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance
Loss of diversity of indigenous floral communities	5	1	2	2	4		5	1	1	2	3	
	Permanent	Activity specific	Small	Limited sensitivity	Highly likely	Moderate	Permanent	Activity specific	Insignificant	Limited sensitivity	Likely	Low

**Table 9: Assessment of significance of potential impacts on faunal communities associated with the proposed road upgrade and contractors camp construction at Mortimer Smelter pre- and post- mitigation**

Impact	Prior to mitigation						Post mitigation					
	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance
Loss of habitat for faunal communities including species of conservation concern	5	3	3	4	3		5	3	2	4	2	
	Permanent	Local area	Significant	Highly sensitive	Likely	High	Permanent	Local area	Small	Highly sensitive	Possible	Moderate



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## 7.4 Potential mitigation measures

The focus of mitigation measures should be to reduce the significance of potential impacts associated with the development and thereby to:

- Prevent the loss of floral species of conservation concern and
- Prevent the loss of faunal species of conservation concern and to prevent the further reduction of faunal biodiversity.

### 7.4.1 Mitigation Measures for Impacts on Vegetation Communities

Recommended mitigation and rehabilitation measures include the following:

- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species;
- Compilation of and implementation of an alien vegetation management plan for the entire site.

### 7.4.2 Mitigation Measures for Impacts on Faunal Communities

Recommended mitigation and rehabilitation measures include the following:

- If any faunal species of conservation importance are recorded during construction, activities should temporarily cease and an appropriate specialist should be consulted to identify the correct course of action;
- Staff should be educated about the sensitivity of faunal species and measures should be put in place to deal with any species that are encountered during the construction process. The intentional killing of any animals including snakes, lizards, birds or other animals should be strictly prohibited;

## 8 CONCLUSIONS

The following conclusions were reached based on the results of this assessment:

- The Mortimer Smelter site is situated in the Dwaalboom Thornveld (SVcb1) vegetation community. This vegetation community was listed by Mucina & Rutherford (2006) as Least Concern (LC);
- A list of plant species of conservation concern was compiled based on the POSA database. Three (3) plant species of conservation concern are expected to occur within QDS 2427CC. No SA endemic plant species are expected. The likelihood of occurrence of these plant species was assessed based on their known habitat preferences and found to be low;
- Based on this assessment it can be concluded that the proposed development is unlikely to impact on any aquatic or terrestrial Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs);



- The area surrounding the project area is extensively developed, including industry, mining, bulk services and urbanisation;
- The most significant anthropogenic impacts identified on site included:
  - Loss of habitat due to the encroaching developments;
  - Habitat fragmentation;
  - Dumping of slag and tailings; and
  - The presence of alien invasive plant species;
- Two vegetation communities were recorded on the site namely disturbed Turf-thornveld and wetlands. The vegetation communities associated with the proposed road upgrade and construction camp areas comprise the disturbed Turf-thornveld and adjoins the wetland areas;
- The importance and sensitivity of the plant communities associated with the proposed road upgrade and contractors camp site was regarded as low due to the absence of plant species of conservation concern, the high degree of anthropogenic disturbance and the prevalence of alien invasive plant species.;
- One category 1b alien invasive plant species were recorded on the site and must therefore be removed by implementing an alien invasive plant management programme in compliance of section 75 of the National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA);
- Although no faunal species of concern were recorded during the survey, the likelihood of species occurring on the site was rated as good;
- Despite being disturbed the significance of the loss of the Turf-thornveld was rated as moderately significant prior to mitigation;
- Construction related impacts on fauna were rated as having a high significance due to potential presence of species of conservation concern.

## 9 IMPACT STATEMENT

An impact statement is required as per the NEMA regulations with regards to the proposed development.

Considering the above-mentioned conclusions, it is the opinion of the specialist that the project be favourably considered but that all mitigation measures should be strictly adhered to.

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## APPENDIX A: EXPECTED PLANT SPECIES

Species	Threat status	SA Endemic
<i>Abildgaardia ovata</i> (Burm.f.) Kral	LC	No
<i>Abutilon austro-africanum</i> Hochr.	LC	No
<i>Acacia burkei</i> Benth.	LC	No
<i>Acacia erubescens</i> Welw. ex Oliv.	LC	No
<i>Acacia mellifera</i> (Vahl) Benth. subsp. <i>detinens</i> (Burch.) Brenan	LC	No
<i>Acacia tortilis</i> (Forssk.) Hayne subsp. <i>heteracantha</i> (Burch.) Brenan	LC	No
<i>Acalypha angustata</i> Sond.	LC	No
<i>Acalypha villicaulis</i> Hochst.	LC	No
<i>Acokanthera oppositifolia</i> (Lam.) Codd	LC	No
<i>Actiniopteris radiata</i> (J.König ex Sw.) Link	LC	No
<i>Aerva leucura</i> Moq.	LC	No
<i>Agathisanthemum bojeri</i> Klotzsch subsp. <i>bojeri</i>	LC	No
<i>Agelanthus natalitius</i> (Meisn.) Polhill & Wiens subsp. <i>zeyheri</i> (Harv.) Polhill & Wiens	LC	No
<i>Alloteropsis semialata</i> (R.Br.) Hitchc. subsp. <i>semialata</i>	LC	No
<i>Alysicarpus zeyheri</i> Harv.	LC	No
<i>Andropogon chinensis</i> (Nees) Merr.	LC	No
<i>Antheophora pubescens</i> Nees	LC	No
<i>Anthospermum rigidum</i> Eckl. & Zeyh. subsp. <i>rigidum</i>	LC	No
<i>Antizoma angustifolia</i> (Burch.) Miers ex Harv.	LC	No
<i>Apodytes dimidiata</i> E.Mey. ex Arn. subsp. <i>dimidiata</i>	LC	No
<i>Aptosimum elongatum</i> Engl.	LC	No
<i>Aptosimum lineare</i> Marloth & Engl. var. <i>lineare</i>	LC	No
<i>Aristida congesta</i> Roem. & Schult. subsp. <i>barbicollis</i> (Trin. & Rupr.) De Winter	LC	No
<i>Aristida diffusa</i> Trin. subsp. <i>burkei</i> (Stapf) Melderis	LC	No
<i>Asclepias aurea</i> (Schltr.) Schltr.	LC	No
<i>Asclepias gibba</i> (E.Mey.) Schltr. var. <i>gibba</i>	LC	No
<i>Asparagus cooperi</i> Baker	LC	No
<i>Asparagus virgatus</i> Baker	LC	No
<i>Aspilia mossambicensis</i> (Oliv.) Wild	LC	No
<i>Asplenium aethiopicum</i> (Burm.f.) Bech.	LC	No
<i>Asplenium phillipsianum</i> (Kümmerle) S.S.Bir , Fraser-Jenk. & J.D.Lovis	LC	No
<i>Barleria bremekampii</i> Oberm.	LC	No
<i>Bauhinia galpinii</i> N.E.Br.	LC	No
<i>Berchemia zeyheri</i> (Sond.) Grubov	LC	No
<i>Bergia decumbens</i> Planch. ex Harv.	LC	No
<i>Bewsia biflora</i> (Hack.) Gooss.	LC	No
<i>Blepharis serrulata</i> (Nees) Ficalho & Hiern	LC	No
<i>Boscia albitrunca</i> (Burch.) Gilg & Gilg-Ben.	LC	No
<i>Boscia foetida</i> Schinz subsp. <i>rehmanniana</i> (Pestal.) Toelken	LC	No
<i>Bothriochloa bladhii</i> (Retz.) S.T.Blake	LC	No
<i>Bothriochloa insculpta</i> (Hochst. ex A.Rich.) A.Camus	LC	No



<i>Bothriochloa radicans</i> (Lehm.) A.Camus	LC	No
<i>Brachiaria brizantha</i> (A.Rich.) Stapf	LC	No
<i>Brachiaria deflexa</i> (Schumach.) C.E.Hubb. ex Robyns	LC	No
<i>Brachiaria eruciformis</i> (Sm.) Griseb.	LC	No
<i>Brachiaria nigropedata</i> (Ficalho & Hiern) Stapf	LC	No
<i>Brachymenium acuminatum</i> Harv.		No
<i>Bridelia mollis</i> Hutch.	LC	No
<i>Bryum argenteum</i> Hedw.		No
<i>Bryum capillare</i> Hedw.		No
<i>Bryum pycnophyllum</i> (Dixon) Mohamed		No
<i>Buddleja saligna</i> Willd.	LC	No
<i>Bulbostylis burchellii</i> (Ficalho & Hiern) C.B.Clarke	LC	No
<i>Bulbostylis humilis</i> (Kunth) C.B.Clarke	LC	No
<i>Bulbostylis scabricaulis</i> Cherm.	LC	No
<i>Cadaba termitaria</i> N.E.Br.	LC	No
<i>Calodendrum capense</i> (L.f.) Thunb.	LC	No
<i>Carissa bispinosa</i> (L.) Desf. ex Brenan	LC	No
<i>Cenchrus ciliaris</i> L.	LC	No
<i>Cephalaria zeyheriana</i> Szabó	LC	No
<i>Chaetacme aristata</i> Planch.	LC	No
<i>Chamaecrista biensis</i> (Steyaert) Lock	LC	No
<i>Chamaecrista comosa</i> E.Mey. var. <i>capricornia</i> (Steyaert) Lock	LC	No
<i>Chascanum hederaceum</i> (Sond.) Moldenke var. <i>hederaceum</i>	LC	No
<i>Cheilanthes hirta</i> Sw. var. <i>brevipilosa</i> W.& N.Jacobsen forma <i>laxa</i> (Kunze) W.& N.Jacobsen	Not Evaluated	No
<i>Cheilanthes nielsii</i> W.Jacobsen	LC	No
<i>Cheilanthes viridis</i> (Forssk.) Sw. var. <i>glauca</i> (Sim) Schelpe & N.C.Anthony	LC	No
<i>Chironia palustris</i> Burch. subsp. <i>transvaalensis</i> (Gilg) I.Verd.	LC	No
<i>Chlorophytum recurvifolium</i> (Baker) C.Archer & Kativu	LC	No
<i>Chrysopogon serrulatus</i> Trin.	LC	No
<i>Cleome monophylla</i> L.	LC	No
<i>Clutia pulchella</i> L. var. <i>pulchella</i>	LC	No
<i>Combretum apiculatum</i> Sond. subsp. <i>apiculatum</i>	LC	No
<i>Combretum imberbe</i> Wawra	LC	No
<i>Combretum molle</i> R.Br. ex G.Don	LC	No
<i>Combretum zeyheri</i> Sond.	LC	No
<i>Commelina africana</i> L. var. <i>barberae</i> (C.B.Clarke) C.B.Clarke	LC	No
<i>Commelina livingstonii</i> C.B.Clarke	LC	No
<i>Commelina modesta</i> Oberm.	LC	No
<i>Commiphora glandulosa</i> Schinz	LC	No
<i>Commiphora neglecta</i> I.Verd.	LC	No
<i>Commiphora schimperi</i> (O.Berg) Engl.	LC	No
<i>Convolvulus aschersonii</i> Engl.	LC	No
<i>Corchorus asplenifolius</i> Burch.	LC	No
<i>Crabbea angustifolia</i> Nees	LC	No



<i>Crassula lanceolata</i> (Eckl. & Zeyh.) Endl. ex Walp. subsp. <i>transvaalensis</i> (Kuntze) Toelken	LC	No
<i>Craterostigma plantagineum</i> Hochst.	LC	No
<i>Crinum paludosum</i> I. Verd.	LC	No
<i>Crossandra greenstockii</i> S. Moore	LC	No
<i>Croton gratissimus</i> Burch. var. <i>gratissimus</i>	LC	No
<i>Croton gratissimus</i> Burch. var. <i>subgratissimus</i> (Prain) Burt Davy	LC	No
<i>Cryptolepis oblongifolia</i> (Meisn.) Schltr.	LC	No
<i>Cucumis hirsutus</i> Sond.	LC	No
<i>Cussonia transvaalensis</i> Reyneke	LC	No
<i>Cyanotis speciosa</i> (L.f.) Hassk.	LC	No
<i>Cymbopogon pospischilii</i> (K. Schum.) C.E. Hubb.	Not Evaluated	No
<i>Cymbopogon prolixus</i> (Stapf) E. Phillips	LC	No
<i>Cynodon dactylon</i> (L.) Pers.	LC	No
<i>Cyperus albostriatus</i> Schrad.	LC	No
<i>Cyperus austro-africanus</i> C. Archer & Goetgh.	LC	No
<i>Cyperus cuspidatus</i> Kunth	LC	No
<i>Cyperus decurvatus</i> (C.B. Clarke) C. Archer & Goetgh.	LC	No
<i>Cyperus indecorus</i> Kunth var. <i>indecorus</i>	LC	No
<i>Cyperus kyllingiella</i> Larridon	LC	No
<i>Cyperus rupestris</i> Kunth var. <i>rupestris</i>	LC	No
<i>Cyperus uitenhagensis</i> (Steud.) C. Archer & Goetgh.	LC	No
<i>Cyphia assimilis</i> Sond.	LC	No
<i>Cyphostemma cirrhosum</i> (Thunb.) Desc. ex Wild & R.B. Drumm. subsp. <i>transvaalense</i> (Szyszyl.) Wild & R.B. Drumm.	LC	No
<i>Cyphostemma segmentatum</i> (C.A. Sm.) J.J.M. van der Merwe	LC	No
<i>Cyphostemma sulcatum</i> (C.A. Sm.) J.J.M. van der Merwe	LC	No
<i>Dalbergia sissoo</i> Roxb. ex . DC.	Not Evaluated	No
<i>Dalechampia galpinii</i> Pax	LC	No
<i>Dianthus mooiensis</i> F.N. Williams subsp. <i>mooiensis</i> var. <i>mooiensis</i>	Not Evaluated	No
<i>Dianthus zeyheri</i> Sond. subsp. <i>zeyheri</i>	Not Evaluated	No
<i>Dicerocaryum senecioides</i> (Klotzsch) Abels	LC	No
<i>Dichanthium annulatum</i> (Forssk.) Stapf var. <i>papillosum</i> (A. Rich.) de Wet & Harlan	LC	No
<i>Dicoma anomala</i> Sond. subsp. <i>gerrardii</i> (Harv. ex F.C. Wilson) S. Ortíz & Rodr. Oubiña	LC	No
<i>Digitaria argyrograpta</i> (Nees) Stapf	LC	No
<i>Digitaria eriantha</i> Steud.	LC	No
<i>Diheteropogon amplexens</i> (Nees) Clayton var. <i>amplexens</i>	LC	No
<i>Dinebra retroflexa</i> (Vahl) Panz. var. <i>condensata</i> S.M. Phillips	LC	No
<i>Diospyros lycioides</i> Desf. subsp. <i>lycioides</i>	LC	No
<i>Diospyros whyteana</i> (Hiern) F. White	LC	No
<i>Doryopteris concolor</i> (Langsd. & Fisch.) Kuhn	LC	No
<i>Dovyalis zeyheri</i> (Sond.) Warb.	LC	No
<i>Drimia uniflora</i> J.C. Manning & Goldblatt	LC	No



## WSP

<i>Echinochloa crus-galli</i> (L.) P.Beauv.	LC	No
<i>Ehretia rigida</i> (Thunb.) Druce subsp. <i>nervifolia</i> Retief & A.E.van Wyk	LC	No
<i>Eleocharis limosa</i> (Schrاد.) Schult.	LC	No
<i>Eleusine coracana</i> (L.) Gaertn. subsp. <i>africana</i> (Kenn.-O'Byrne) Hilu & de Wet	LC	No
<i>Elionurus muticus</i> (Spreng.) Kunth	LC	No
<i>Enneapogon scoparius</i> Stapf	LC	No
<i>Enteropogon macrostachyus</i> (Hochst. ex A.Rich.) Munro ex Benth.	LC	No
<i>Eragrostis barbinodis</i> Hack.	LC	No
<i>Eragrostis biflora</i> Hack. ex Schinz	LC	No
<i>Eragrostis capensis</i> (Thunb.) Trin.	LC	No
<i>Eragrostis chloromelas</i> Steud.	LC	No
<i>Eragrostis cilianensis</i> (All.) Vignolo ex Janch.	LC	No
<i>Eragrostis curvula</i> (Schrاد.) Nees	LC	No
<i>Eragrostis inamoena</i> K.Schum.	LC	No
<i>Eragrostis lappula</i> Nees	LC	No
<i>Eragrostis patentipilosa</i> Hack.	LC	No
<i>Eragrostis planiculmis</i> Nees	LC	No
<i>Eragrostis rigidior</i> Pilg.	LC	No
<i>Eragrostis rotifer</i> Rendle	LC	No
<i>Eragrostis superba</i> Peyr.	LC	No
<i>Eriochloa fatmensis</i> (Hochst. & Steud.) Clayton	LC	No
<i>Eriosema burkei</i> Benth. ex Harv. var. <i>burkei</i>	LC	No
<i>Eriospermum porphyrovalve</i> Baker	LC	No
<i>Erpodium coronatum</i> (Hook.f. & Wilson) Mitt. subsp. <i>transvaaliense</i> (Broth. & Wager) Magill	Not Evaluated	No
<i>Erythrophysa transvaalensis</i> I.Verd.	LC	No
<i>Euclea crispa</i> (Thunb.) Gürke subsp. <i>crispa</i>	LC	No
<i>Euclea natalensis</i> A.DC. subsp. <i>angustifolia</i> F.White	LC	No
<i>Euclea undulata</i> Thunb.	LC	No
<i>Euphorbia inaequilatera</i> Sond. var. <i>inaequilatera</i>	LC	No
<i>Euphorbia schinzii</i> Pax	LC	No
<i>Eustachys paspaloides</i> (Vahl) Lanza & Mattei	LC	No
<i>Evolvulus alsinoides</i> (L.) L.	LC	No
<i>Fabronia pilifera</i> Hornsch.	Not Evaluated	No
<i>Faurea saligna</i> Harv.	LC	No
<i>Fimbristylis complanata</i> (Retz.) Link	LC	No
<i>Fingerhuthia africana</i> Lehm.	LC	No
<i>Flueggea virosa</i> (Roxb. ex Willd.) Voigt subsp. <i>virosa</i>	LC	No
<i>Fuirena pubescens</i> (Poir.) Kunth var. <i>pubescens</i>	LC	No
<i>Gardenia volkensii</i> K.Schum. subsp. <i>volkensii</i> var. <i>volkensii</i>	LC	No
<i>Geigeria burkei</i> Harv. subsp. <i>burkei</i> var. <i>zeyheri</i> (Harv.) Merxm.	LC	No
<i>Gerbera ambigua</i> (Cass.) Sch.Bip.	LC	No
<i>Gladiolus oatesii</i> Rolfe	LC	No
<i>Gladiolus sericeovillosus</i> Hook.f. subsp. <i>calvatus</i> (Baker) Goldblatt	LC	No
<i>Gnaphalium filagopsis</i> Hilliard & B.L.Burt	LC	No



<i>Gnidia microcephala</i> Meisn.	LC	No
<i>Gnidia sericocephala</i> (Meisn.) Gilg ex Engl.	LC	No
<i>Grewia bicolor</i> Juss. var. <i>bicolor</i>	LC	No
<i>Grewia flava</i> DC.	LC	No
<i>Grewia flavescens</i> Juss.	LC	No
<i>Grewia hexamita</i> Burret	LC	No
<i>Grewia monticola</i> Sond.	LC	No
<i>Grewia occidentalis</i> L. var. <i>occidentalis</i>	LC	No
<i>Gymnosporia buxifolia</i> (L.) Szyszyl.	LC	No
<i>Gymnosporia polyacanthus</i> (Sond.) Szyszyl. subsp. <i>vaccinifolia</i> (P.Conrath) M.Jordaan	LC	No
<i>Harpagophytum zeyheri</i> Decne. subsp. <i>zeyheri</i>	LC	No
<i>Helichrysum harveyanum</i> Wild	LC	No
<i>Helichrysum nudifolium</i> (L.) Less. var. <i>nudifolium</i>	LC	No
<i>Helinus integrifolius</i> (Lam.) Kuntze	LC	No
<i>Hermannia boraginiflora</i> Hook.	LC	No
<i>Hermannia depressa</i> N.E.Br.	LC	No
<i>Hermannia floribunda</i> Harv.	LC	No
<i>Hermannia umbratica</i> I.Verd.	LC	No
<i>Hermbsstaedtia odorata</i> (Burch.) T.Cooke var. <i>albi-rosea</i> Suess.	LC	No
<i>Heteropogon contortus</i> (L.) Roem. & Schult.	LC	No
<i>Hibiscus calyphyllus</i> Cav.	LC	No
<i>Hibiscus micranthus</i> L.f. var. <i>micranthus</i>	LC	No
<i>Hibiscus microcarpus</i> Garcke	LC	No
<i>Hibiscus pusillus</i> Thunb.	LC	No
<i>Hirpicium bechuanense</i> (S.Moore) Roessler	LC	No
<i>Huernia transvaalensis</i> Stent	LC	No
<i>Hyparrhenia anamesa</i> Clayton	LC	No
<i>Hyparrhenia filipendula</i> (Hochst.) Stapf var. <i>pilosa</i> (Hochst.) Stapf	LC	No
<i>Hyparrhenia hirta</i> (L.) Stapf	LC	No
<i>Hyparrhenia poecilotricha</i> (Hack.) Stapf	LC	No
<i>Hyparrhenia quarrei</i> Robyns	LC	No
<i>Hyparrhenia tamba</i> (Steud.) Stapf	LC	No
<i>Hypericum aethiopicum</i> Thunb. subsp. <i>sonderi</i> (Bredell) N.Robson	LC	No
<i>Hyperthelia dissoluta</i> (Nees ex Steud.) Clayton	LC	No
<i>Hypoestes forskalii</i> (Vahl) R.Br.	LC	No
<i>Hypoxis angustifolia</i> Lam. var. <i>angustifolia</i>	LC	No
<i>Ilex mitis</i> (L.) Radlk. var. <i>mitis</i>	<b>Declining</b>	No
<i>Indigastrum costatum</i> (Guill. & Perr.) Schrire subsp. <i>macrum</i> (E.Mey.) Schrire	LC	No
<i>Indigofera daleoides</i> Benth. ex Harv. var. <i>daleoides</i>	LC	No
<i>Indigofera hedyantha</i> Eckl. & Zeyh.	LC	No
<i>Indigofera heterotricha</i> DC.	LC	No
<i>Indigofera holubii</i> N.E.Br.	LC	No
<i>Indigofera torulosa</i> E.Mey. var. <i>torulosa</i>	LC	No
<i>Indigofera vicioides</i> Jaub. & Spach var. <i>rogersii</i> (R.E.Fr.) J.B.Gillett	LC	No
<i>Ipomoea crassipes</i> Hook. var. <i>crassipes</i>	LC	No



<i>Ipomoea holubii</i> Baker	LC	No
<i>Ipomoea obscura</i> (L.) Ker Gawl. var. <i>obscura</i>	LC	No
<i>Ischaemum fasciculatum</i> Brongn.	LC	No
<i>Jamesbrittenia aurantiaca</i> (Burch.) Hilliard	LC	No
<i>Jamesbrittenia burkeana</i> (Benth.) Hilliard	LC	No
<i>Jasminum breviflorum</i> Harv. ex C.H.Wright	LC	No
<i>Jatropha schlechteri</i> Pax subsp. <i>setifera</i> (Hutch.) Radcl.-Sm.	LC	No
<i>Justicia betonica</i> L.	LC	No
<i>Justicia flava</i> (Vahl) Vahl	LC	No
<i>Justicia odora</i> (Forssk.) Vahl	LC	No
<i>Kalanchoe lanceolata</i> (Forssk.) Pers.	LC	No
<i>Kalanchoe rotundifolia</i> (Haw.) Haw.	LC	No
<i>Keetia gueinzii</i> (Sond.) Bridson	LC	No
<i>Kyllinga alba</i> Nees	LC	No
<i>Kyllinga erecta</i> Schumach. var. <i>erecta</i>	LC	No
<i>Kyphocarpa angustifolia</i> (Moq.) Lopr.	LC	No
<i>Laggera crispata</i> (Vahl) Hepper & J.R.I.Wood	LC	No
<i>Lanea discolor</i> (Sond.) Engl.	LC	No
<i>Lantana rugosa</i> Thunb.	LC	No
<i>Ledebouria atrobrunnea</i> S.Venter	VU	No
<i>Limeum viscosum</i> (J.Gay) Fenzl subsp. <i>viscosum</i> var. <i>viscosum</i>	LC	No
<i>Loudetia flavida</i> (Stapf) C.E.Hubb.	LC	No
<i>Lycium horridum</i> Thunb.	LC	No
<i>Malvastrum coromandelianum</i> (L.) Garcke	Not Evaluated	No
<i>Maytenus undata</i> (Thunb.) Blakelock	LC	No
<i>Melhania acuminata</i> Mast. var. <i>agnosta</i> (K.Schum.) Wild	LC	No
<i>Melinis nerviglumis</i> (Franch.) Zizka	LC	No
<i>Melinis repens</i> (Willd.) Zizka subsp. <i>repens</i>	LC	No
<i>Menodora heterophylla</i> Moric. ex DC. var. <i>australis</i> Steyerem.	LC	No
<i>Merremia palmata</i> Hallier f.	LC	No
<i>Microchloa caffra</i> Nees	LC	No
<i>Mimusops zeyheri</i> Sond.	LC	No
<i>Monsonia angustifolia</i> E.Mey. ex A.Rich.	LC	No
<i>Mundulea sericea</i> (Willd.) A.Chev. subsp. <i>sericea</i>	LC	No
<i>Myrothamnus flabellifolius</i> Welw.	DDT	No
<i>Neorautanenia ficifolia</i> (Benth. ex Harv.) C.A.Sm.	LC	No
<i>Nidorella hottentotica</i> DC.	LC	No
<i>Nidorella resedifolia</i> DC. subsp. <i>resedifolia</i>	LC	No
<i>Nuxia congesta</i> R.Br. ex Fresen.	LC	No
<i>Ochna glauca</i> I.Verd.	LC	No
<i>Ocimum gratissimum</i> L. subsp. <i>gratissimum</i> var. <i>gratissimum</i>	LC	No
<i>Olea europaea</i> L. subsp. <i>africana</i> (Mill.) P.S.Green	LC	No
<i>Orthosiphon suffrutescens</i> (Thonn.) J.K.Morton	LC	No
<i>Osyris lanceolata</i> Hochst. & Steud.	LC	No
<i>Oxalis depressa</i> Eckl. & Zeyh.	LC	No
<i>Oxalis smithiana</i> Eckl. & Zeyh.	LC	No



<i>Ozoroa paniculosa</i> (Sond.) R.& A.Fern. var. <i>paniculosa</i>	LC	No
<i>Panicum coloratum</i> L. var. <i>coloratum</i>	LC	No
<i>Panicum deustum</i> Thunb.	LC	No
<i>Panicum maximum</i> Jacq.	LC	No
<i>Panicum schinzii</i> Hack.	LC	No
<i>Pappea capensis</i> Eckl. & Zeyh.	LC	No
<i>Paspalum scrobiculatum</i> L.	LC	No
<i>Pavetta eylesii</i> S.Moore	LC	No
<i>Pavetta gardeniifolia</i> A.Rich. var. <i>gardeniifolia</i>	LC	No
<i>Pavetta gardeniifolia</i> A.Rich. var. <i>subtomentosa</i> K.Schum.	LC	No
<i>Pavetta zeyheri</i> Sond. subsp. <i>zeyheri</i>	LC	No
<i>Pearsonia uniflora</i> (Kensit) Polhill	LC	No
<i>Pellaea calomelanos</i> (Sw.) Link var. <i>calomelanos</i>	LC	No
<i>Peltophorum africanum</i> Sond.	LC	No
<i>Pentanisia angustifolia</i> (Hochst.) Hochst.	LC	No
<i>Pentarrhinum insipidum</i> E.Mey.	LC	No
<i>Periglossum angustifolium</i> Decne.	LC	No
<i>Phyllanthus incurvus</i> Thunb.	LC	No
<i>Phytolacca dioica</i> L.	Not Evaluated	No
<i>Plectranthus cylindraceus</i> Hochst. ex Benth.	LC	No
<i>Plectranthus neochilus</i> Schltr.	LC	No
<i>Plumbago zeylanica</i> L.	Not Evaluated	No
<i>Polygala hottentotta</i> C.Presl	LC	No
<i>Polygala krumanina</i> Burch. ex Ficalho & Hiern	LC	No
<i>Polygala transvaalensis</i> Chodat subsp. <i>transvaalensis</i>	LC	No
<i>Portulaca quadrifida</i> L.	LC	No
<i>Protea caffra</i> Meisn. subsp. <i>caffra</i>	LC	No
<i>Raphionacme galpinii</i> Schltr.	LC	No
<i>Rhoicissus tridentata</i> (L.f.) Wild & R.B.Drumm. subsp. <i>tridentata</i>	Not Evaluated	No
<i>Rhynchosia albissima</i> Gand.	LC	No
<i>Rhynchosia atropurpurea</i> Germish.	LC	No
<i>Rhynchosia densiflora</i> (Roth) DC. subsp. <i>chrysadenia</i> (Taub.) Verdc.	LC	No
<i>Rhynchosia holosericea</i> Schinz	LC	No
<i>Rhynchosia minima</i> (L.) DC. var. <i>prostrata</i> (Harv.) Meikle	LC	No
<i>Rhynchosia totta</i> (Thunb.) DC. var. <i>totta</i>	LC	No
<i>Riccia okahandjana</i> S.W.Arnell	Not Evaluated	No
<i>Riccia volkii</i> S.W.Arnell	Not Evaluated	No
<i>Rotheca louwalbertsii</i> (P.P.J.Herman) P.P.J.Herman & Retief	LC	No
<i>Rothmannia capensis</i> Thunb.	LC	No
<i>Salvia runcinata</i> L.f.	LC	No
<i>Sansevieria aethiopica</i> Thunb.	LC	No
<i>Sarcostemma viminale</i> (L.) R.Br. subsp. <i>viminale</i>	LC	No
<i>Scadoxus puniceus</i> (L.) Friis & Nordal	LC	No





## WSP

<i>Schizachyrium sanguineum</i> (Retz.) Alston	LC	No
<i>Schizocarpus nervosus</i> (Burch.) Van der Merwe	LC	No
<i>Schmidtia pappophoroides</i> Steud.	LC	No
<i>Schoenoplectus muricinux</i> (C.B.Clarke) J.Raynal	LC	No
<i>Schoenoplectus muriculatus</i> (Kük.) Browning	LC	No
<i>Schoenoxiphium lehmannii</i> (Nees) Steud.	LC	No
<i>Searsia dentata</i> (Thunb.) F.A.Barkley	LC	No
<i>Searsia leptodictya</i> (Diels) T.S. Yi, A.J.Mill. & J.Wen forma <i>leptodictya</i>	Not Evaluated	No
<i>Searsia magalismontana</i> (Sond.) Moffett subsp. <i>magalismontana</i>	LC	No
<i>Searsia pyroides</i> (Burch.) Moffett var. <i>pyroides</i>	LC	No
<i>Secamone filiformis</i> (L.f.) J.H.Ross	LC	No
<i>Selago lacunosa</i> Klotzsch	LC	No
<i>Senecio affinis</i> DC.	LC	No
<i>Senecio barbertonicus</i> Klatt	LC	No
<i>Sesbania transvaalensis</i> J.B.Gillett	LC	No
<i>Setaria incrassata</i> (Hochst.) Hack.	LC	No
<i>Setaria lindenbergiana</i> (Nees) Stapf	LC	No
<i>Setaria nigrirostris</i> (Nees) T.Durand & Schinz	LC	No
<i>Setaria sphacelata</i> (Schumach.) Stapf & C.E.Hubb. ex M.B.Moss var. <i>torta</i> (Stapf) Clayton	LC	No
<i>Sida chrysantha</i> Ulbr.	LC	No
<i>Sida cordifolia</i> L. subsp. <i>cordifolia</i>	LC	No
<i>Sida dregei</i> Burt Davy	LC	No
<i>Sorghum versicolor</i> Andersson	LC	No
<i>Sphedamnocarpus pruriens</i> (A.Juss.) Szyszyl. subsp. <i>pruriens</i>	LC	No
<i>Sphenostylis angustifolia</i> Sond.	LC	No
<i>Sporobolus festivus</i> Hochst. ex A.Rich.	LC	No
<i>Sporobolus fimbriatus</i> (Trin.) Nees	LC	No
<i>Sporobolus stapfianus</i> Gand.	LC	No
<i>Stenostelma corniculatum</i> (E.Mey.) Bullock	LC	No
<i>Stomatostemma monteiroae</i> (Oliv.) N.E.Br.	LC	No
<i>Striga asiatica</i> (L.) Kuntze	LC	No
<i>Striga bilabiata</i> (Thunb.) Kuntze subsp. <i>bilabiata</i>	LC	No
<i>Striga elegans</i> Benth.	LC	No
<i>Striga gesnerioides</i> (Willd.) Vatke	LC	No
<i>Stylosanthes fruticosa</i> (Retz.) Alston	LC	No
<i>Syntrichia laevipila</i> Brid.		No
<i>Talinum arnotii</i> Hook.f.	LC	No
<i>Talinum cafferum</i> (Thunb.) Eckl. & Zeyh.	LC	No
<i>Tarchonanthus camphoratus</i> L.	LC	No
<i>Tephrosia burchellii</i> Burt Davy	LC	No
<i>Tephrosia longipes</i> Meisn. subsp. <i>longipes</i> var. <i>longipes</i>	LC	No
<i>Tephrosia multijuga</i> R.G.N.Young	LC	No
<i>Tephrosia purpurea</i> (L.) Pers. subsp. <i>leptostachya</i> (DC.) Brummitt var. <i>leptostachya</i>	LC	No
<i>Terminalia sericea</i> Burch. ex DC.	LC	No



## WSP

<i>Teucrium trifidum</i> Retz.	LC	No
<i>Themeda triandra</i> Forssk.	LC	No
<i>Thesium costatum</i> A.W.Hill var. <i>costatum</i>	LC	No
<i>Thesium costatum</i> A.W.Hill var. <i>costatum</i>	LC	No
<i>Thesium magalismontanum</i> Sond.	LC	No
<i>Thesium utile</i> A.W.Hill	LC	No
<i>Thunbergia atriplicifolia</i> E.Mey. ex Nees	LC	No
<i>Thunbergia neglecta</i> Sond.	LC	No
<i>Trachypogon spicatus</i> (L.f.) Kuntze	LC	No
<i>Tragus berteronianus</i> Schult.	LC	No
<i>Tricholaena monachne</i> (Trin.) Stapf & C.E.Hubb.	LC	No
<i>Trichoneura grandiglumis</i> (Nees) Ekman	LC	No
<i>Trichostomum brachydontium</i> Bruch	Not Evaluated	No
<i>Tripogon minimus</i> (A.Rich.) Steud.	LC	No
<i>Tristachya biseriata</i> Stapf	LC	No
<i>Triumfetta sonderi</i> Ficalho & Hiern	LC	No
<i>Trochomeria macrocarpa</i> (Sond.) Hook.f. subsp. <i>macrocarpa</i>	LC	No
<i>Tulbaghia leucantha</i> Baker	LC	No
<i>Turraea obtusifolia</i> Hochst.	LC	No
<i>Urelytrum agropyroides</i> (Hack.) Hack.	LC	No
<i>Vahlia capensis</i> (L.f.) Thunb. subsp. <i>capensis</i>	LC	No
<i>Verbena brasiliensis</i> Vell.	Not Evaluated	No
<i>Vernonia galpinii</i> Klatt	LC	No
<i>Vigna schlechteri</i> Harms	LC	No
<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>stenophylla</i> (Harv.) Maréchal, <i>Mascherpa</i> & Stainier	LC	No
<i>Viscum combreticola</i> Engl.	LC	No
<i>Viscum rotundifolium</i> L.f.	LC	No
<i>Viscum verrucosum</i> Harv.	LC	No
<i>Vitex zeyheri</i> Sond.	LC	No
<i>Wahlenbergia undulata</i> (L.f.) A.DC.	LC	No
<i>Waltheria indica</i> L.	LC	No
<i>Xerophyta humilis</i> (Baker) T.Durand & Schinz	LC	No
<i>Ximenia caffra</i> Sond. var. <i>caffra</i>	LC	No
<i>Zaleya pentandra</i> (L.) C.Jeffrey	LC	No
<i>Zanthoxylum capense</i> (Thunb.) Harv.	LC	No
<i>Ziziphus mucronata</i> Willd. subsp. <i>mucronata</i>	LC	No
<i>Ziziphus zeyheriana</i> Sond.	LC	No
<i>Zornia glochidiata</i> Rchb. ex DC.	LC	No
<i>Zornia milneana</i> Mohlenbr.	LC	No



**APPENDIX B: EXPECTED AVIFAUNAL SPECIES**

Species	Common Name	Conservation Status	
		Regional (Eskom, 2016)	Global (IUCN, 2017)
<i>Accipiter minullus</i>	Sparrowhawk, Little	Unlisted	LC
<i>Acridotheres tristis</i>	Myna, Common	Unlisted	LC
<i>Acrocephalus baeticatus</i>	Reed-warbler, African	Unlisted	Unlisted
<i>Acrocephalus gracilirostris</i>	Swamp-warbler, Lesser	Unlisted	LC
<i>Actitis hypoleucos</i>	Sandpiper, Common	Unlisted	LC
<i>Actophilornis africanus</i>	Jacana, African	Unlisted	LC
<i>Alcedo cristata</i>	Kingfisher, Malachite	Unlisted	Unlisted
<i>Alopochen aegyptiacus</i>	Goose, Egyptian	Unlisted	LC
<i>Amadina fasciata</i>	Finch, Cut-throat	Unlisted	LC
<i>Amandava subflava</i>	Waxbill, Orange-breasted	Unlisted	LC
<i>Amauornis flavirostris</i>	Crake, Black	Unlisted	LC
<i>Anas capensis</i>	Teal, Cape	Unlisted	LC
<i>Anas erythrorhyncha</i>	Teal, Red-billed	Unlisted	LC
<i>Anas smithii</i>	Shoveler, Cape	Unlisted	LC
<i>Anas undulata</i>	Duck, Yellow-billed	Unlisted	LC
<i>Anhinga rufa</i>	Darter, African	Unlisted	LC
<i>Anthoscopus minutus</i>	Penduline-tit, Cape	Unlisted	LC
<i>Anthus cinnamomeus</i>	Pipit, African	Unlisted	LC
<i>Apalis thoracica</i>	Apalis, Bar-throated	Unlisted	LC
<i>Apus affinis</i>	Swift, Little	Unlisted	LC
<i>Apus caffer</i>	Swift, White-rumped	Unlisted	LC
<i>Aquila spilogaster</i>	Hawk-eagle, African	Unlisted	LC
<i>Ardea cinerea</i>	Heron, Grey	Unlisted	LC
<i>Ardea goliath</i>	Heron, Goliath	Unlisted	LC
<i>Ardea melanocephala</i>	Heron, Black-headed	Unlisted	LC
<i>Ardea purpurea</i>	Heron, Purple	Unlisted	LC
<i>Ardeola ralloides</i>	Heron, Squacco	Unlisted	LC
<i>Asio capensis</i>	Owl, Marsh	Unlisted	LC
<i>Batis molitor</i>	Batis, Chinspot	Unlisted	LC
<i>Bostrychia hagedash</i>	Ibis, Hadedda	Unlisted	LC
<i>Bradornis mariquensis</i>	Flycatcher, Marico	Unlisted	LC
<i>Bradypterus baboecala</i>	Rush-warbler, Little	Unlisted	LC
<i>Bubalornis niger</i>	Buffalo-weaver, Red-billed	Unlisted	LC
<i>Bubulcus ibis</i>	Egret, Cattle	Unlisted	LC
<i>Buphagus erythrorhynchus</i>	Oxpecker, Red-billed	Unlisted	Unlisted



## WSP

<i>Burhinus capensis</i>	Thick-knee, Spotted	Unlisted	LC
<i>Buteo vulpinus</i>	Buzzard, Steppe	Unlisted	Unlisted
<i>Butorides striata</i>	Heron, Green-backed	Unlisted	LC
<i>Calamonastes fasciolatus</i>	Wren-warbler, Barred	Unlisted	LC
<i>Calendulauda sabota</i>	Lark, Sabota	Unlisted	LC
<i>Calidris minuta</i>	Stint, Little	Unlisted	LC
<i>Camaroptera brevicaudata</i>	Camaroptera, Grey-backed	Unlisted	Unlisted
<i>Campethera abingoni</i>	Woodpecker, Golden-tailed	Unlisted	LC
<i>Caprimulgus pectoralis</i>	Nightjar, Fiery-necked	Unlisted	LC
<i>Centropus burchellii</i>	Coucal, Burchell's	Unlisted	Unlisted
<i>Cercomela familiaris</i>	Chat, Familiar	Unlisted	LC
<i>Cercotrichas leucophrys</i>	Scrub-robin, White-browed	Unlisted	LC
<i>Cercotrichas paena</i>	Scrub-robin, Kalahari	Unlisted	LC
<i>Ceryle rudis</i>	Kingfisher, Pied	Unlisted	LC
<i>Charadrius pecuarius</i>	Plover, Kittlitz's	Unlisted	LC
<i>Charadrius tricollaris</i>	Plover, Three-banded	Unlisted	LC
<i>Chlidonias hybrida</i>	Tern, Whiskered	Unlisted	LC
<i>Chlidonias leucopterus</i>	Tern, White-winged	Unlisted	LC
<i>Chrysococcyx caprius</i>	Cuckoo, Diderick	Unlisted	LC
<i>Chrysococcyx klaas</i>	Cuckoo, Klaas's	Unlisted	LC
<i>Cinnyricinclus leucogaster</i>	Starling, Violet-backed	Unlisted	LC
<i>Cinnyris mariquensis</i>	Sunbird, Marico	Unlisted	LC
<i>Cinnyris talatala</i>	Sunbird, White-bellied	Unlisted	LC
<i>Circaetus cinereus</i>	Snake-eagle, Brown	Unlisted	LC
<i>Cisticola aridulus</i>	Cisticola, Desert	Unlisted	LC
<i>Cisticola chiniana</i>	Cisticola, Rattling	Unlisted	LC
<i>Cisticola fulvicapilla</i>	Neddicky, Neddicky	Unlisted	LC
<i>Cisticola juncidis</i>	Cisticola, Zitting	Unlisted	LC
<i>Cisticola tinniens</i>	Cisticola, Levallant's	Unlisted	LC
<i>Clamator glandarius</i>	Cuckoo, Great Spotted	Unlisted	LC
<i>Clamator jacobinus</i>	Cuckoo, Jacobin	Unlisted	LC
<i>Clamator levallantii</i>	Cuckoo, Levallant's	Unlisted	LC
<i>Colius striatus</i>	Mousebird, Speckled	Unlisted	LC
<i>Columba guinea</i>	Pigeon, Speckled	Unlisted	LC
<i>Columba livia</i>	Dove, Rock	Unlisted	LC
<i>Coracias caudatus</i>	Roller, Lilac-breasted	Unlisted	LC
<i>Coracias naevius</i>	Roller, Purple	Unlisted	LC
<i>Corvinella melanoleuca</i>	Shrike, Magpie	Unlisted	LC
<i>Corvus albus</i>	Crow, Pied	Unlisted	LC
<i>Corvus capensis</i>	Crow, Cape	Unlisted	LC



## WSP

<i>Corythaixoides concolor</i>	Go-away-bird, Grey	Unlisted	LC
<i>Cossypha humeralis</i>	Robin-chat, White-throated	Unlisted	LC
<i>Creatophora cinerea</i>	Starling, Wattled	Unlisted	LC
<i>Crithagra atrogularis</i>	Canary, Black-throated	Unlisted	LC
<i>Crithagra mozambicus</i>	Canary, Yellow-fronted	Unlisted	Unlisted
<i>Cuculus clamosus</i>	Cuckoo, Black	Unlisted	LC
<i>Cuculus solitarius</i>	Cuckoo, Red-chested	Unlisted	LC
<i>Cypsiurus parvus</i>	Palm-swift, African	Unlisted	LC
<i>Delichon urbicum</i>	House-martin, Common	Unlisted	LC
<i>Dendrocygna bicolor</i>	Duck, Fulvous	Unlisted	LC
<i>Dendrocygna viduata</i>	Duck, White-faced	Unlisted	LC
<i>Dendroperdix sephaena</i>	Francolin, Crested	Unlisted	LC
<i>Dendropicos fuscescens</i>	Woodpecker, Cardinal	Unlisted	LC
<i>Dendropicos namaquus</i>	Woodpecker, Bearded	Unlisted	LC
<i>Dicrurus adsimilis</i>	Drongo, Fork-tailed	Unlisted	LC
<i>Dryoscopus cubla</i>	Puffback, Black-backed	Unlisted	LC
<i>Egretta alba</i>	Egret, Great	Unlisted	LC
<i>Egretta ardesiaca</i>	Heron, Black	Unlisted	LC
<i>Egretta garzetta</i>	Egret, Little	Unlisted	LC
<i>Elanus caeruleus</i>	Kite, Black-shouldered	Unlisted	LC
<i>Emberiza flaviventris</i>	Bunting, Golden-breasted	Unlisted	LC
<i>Emberiza tahapisi</i>	Bunting, Cinnamon-breasted	Unlisted	LC
<i>Eremomela icteropygialis</i>	Eremomela, Yellow-bellied	Unlisted	LC
<i>Eremomela usticollis</i>	Eremomela, Burnt-necked	Unlisted	LC
<i>Eremopterix leucotis</i>	Sparrowlark, Chestnut-backed	Unlisted	LC
<i>Estrilda astrild</i>	Waxbill, Common	Unlisted	LC
<i>Estrilda erythronotos</i>	Waxbill, Black-faced	Unlisted	LC
<i>Euplectes afer</i>	Bishop, Yellow-crowned	Unlisted	LC
<i>Euplectes albonotatus</i>	Widowbird, White-winged	Unlisted	LC
<i>Euplectes orix</i>	Bishop, Southern Red	Unlisted	LC
<i>Falco peregrinus</i>	Falcon, Peregrine	Unlisted	LC
<i>Fulica cristata</i>	Coot, Red-knobbed	Unlisted	LC
<i>Gallinula chloropus</i>	Moorhen, Common	Unlisted	LC
<i>Glaucidium perlatum</i>	Owlet, Pearl-spotted	Unlisted	LC
<i>Granatina granatina</i>	Waxbill, Violet-eared	Unlisted	LC
<i>Gyps africanus</i>	Vulture, White-backed	<b>EN</b>	<b>CR</b>
<i>Gyps coprotheres</i>	Vulture, Cape	<b>EN</b>	<b>EN</b>
<i>Halcyon albiventris</i>	Kingfisher, Brown-hooded	Unlisted	LC
<i>Halcyon senegalensis</i>	Kingfisher, Woodland	Unlisted	LC
<i>Haliaeetus vocifer</i>	Fish-eagle, African	Unlisted	LC
<i>Himantopus himantopus</i>	Stilt, Black-winged	Unlisted	LC
<i>Hippolais icterina</i>	Warbler, Icterine	Unlisted	LC



## WSP

<i>Hirundo abyssinica</i>	Swallow, Lesser Striped	Unlisted	LC
<i>Hirundo albigularis</i>	Swallow, White-throated	Unlisted	LC
<i>Hirundo cucullata</i>	Swallow, Greater Striped	Unlisted	LC
<i>Hirundo dimidiata</i>	Swallow, Pearl-breasted	Unlisted	LC
<i>Hirundo fuligula</i>	Martin, Rock	Unlisted	Unlisted
<i>Hirundo rustica</i>	Swallow, Barn	Unlisted	LC
<i>Hirundo semirufa</i>	Swallow, Red-breasted	Unlisted	LC
<i>Indicator minor</i>	Honeyguide, Lesser	Unlisted	LC
<i>Lagonosticta rhodopareia</i>	Firefinch, Jameson's	Unlisted	LC
<i>Lagonosticta rubricata</i>	Firefinch, African	Unlisted	LC
<i>Lagonosticta senegala</i>	Firefinch, Red-billed	Unlisted	LC
<i>Lamprotornis australis</i>	Starling, Burchell's	Unlisted	LC
<i>Lamprotornis nitens</i>	Starling, Cape Glossy	Unlisted	LC
<i>Laniarius atrococcineus</i>	Shrike, Crimson-breasted	Unlisted	LC
<i>Laniarius ferrugineus</i>	Boubou, Southern	Unlisted	LC
<i>Lanius collaris</i>	Fiscal, Common (Southern)	Unlisted	LC
<i>Lanius collurio</i>	Shrike, Red-backed	Unlisted	LC
<i>Lanius minor</i>	Shrike, Lesser Grey	Unlisted	LC
<i>Leptoptilos crumeniferus</i>	Stork, Marabou	<b>NT</b>	LC
<i>Lophotis ruficrista</i>	Korhaan, Red-crested	Unlisted	LC
<i>Lybius torquatus</i>	Barbet, Black-collared	Unlisted	LC
<i>Malaconotus blanchoti</i>	Bush-shrike, Grey-headed	Unlisted	LC
<i>Melaenornis pammelaina</i>	Flycatcher, Southern Black	Unlisted	LC
<i>Melierax gabar</i>	Goshawk, Gabar	Unlisted	LC
<i>Merops apiaster</i>	Bee-eater, European	Unlisted	LC
<i>Merops bullockoides</i>	Bee-eater, White-fronted	Unlisted	LC
<i>Merops nubicoides</i>	Bee-eater, Southern Carmine	Unlisted	LC
<i>Merops persicus</i>	Bee-eater, Blue-cheeked	Unlisted	LC
<i>Merops pusillus</i>	Bee-eater, Little	Unlisted	LC
<i>Milvus aegyptius</i>	Kite, Yellow-billed	Unlisted	Unlisted
<i>Mirafraga africana</i>	Lark, Rufous-naped	Unlisted	LC
<i>Motacilla aguimp</i>	Wagtail, African Pied	Unlisted	LC
<i>Motacilla capensis</i>	Wagtail, Cape	Unlisted	LC
<i>Muscicapa striata</i>	Flycatcher, Spotted	Unlisted	LC
<i>Mycteria ibis</i>	Stork, Yellow-billed	<b>EN</b>	LC
<i>Myioparus plumbeus</i>	Tit-flycatcher, Grey	Unlisted	LC
<i>Netta erythrophthalma</i>	Pochard, Southern	Unlisted	LC
<i>Nilaus afer</i>	Brubru, Brubru	Unlisted	LC
<i>Numida meleagris</i>	Guinea fowl, Helmeted	Unlisted	LC
<i>Nycticorax nycticorax</i>	Night-Heron, Black-crowned	Unlisted	LC
<i>Oena capensis</i>	Dove, Namaqua	Unlisted	LC



## WSP

<i>Oenanthe pileata</i>	Wheatear, Capped	Unlisted	LC
<i>Onychognathus morio</i>	Starling, Red-winged	Unlisted	LC
<i>Oriolus larvatus</i>	Oriole, Black-headed	Unlisted	LC
<i>Ortygospiza atricollis</i>	Quailfinch, African	Unlisted	LC
<i>Parisoma subcaeruleum</i>	Tit-babbler, Chestnut-vented	Unlisted	Unlisted
<i>Parus cinerascens</i>	Tit, Ashy	Unlisted	LC
<i>Parus niger</i>	Tit, Southern Black	Unlisted	Unlisted
<i>Passer diffusus</i>	Sparrow, Southern Grey-headed	Unlisted	LC
<i>Passer domesticus</i>	Sparrow, House	Unlisted	LC
<i>Passer griseus</i>	Sparrow, Northern Grey-headed	Unlisted	LC
<i>Passer melanurus</i>	Sparrow, Cape	Unlisted	LC
<i>Passer motitensis</i>	Sparrow, Great	Unlisted	LC
<i>Pavo cristatus</i>	Peacock, Common	Unlisted	LC
<i>Phalacrocorax africanus</i>	Cormorant, Reed	Unlisted	LC
<i>Phalacrocorax carbo</i>	Cormorant, White-breasted	Unlisted	LC
<i>Philomachus pugnax</i>	Ruff, Ruff	Unlisted	LC
<i>Phoeniculus purpureus</i>	Wood-hoopoe, Green	Unlisted	LC
<i>Phylloscopus trochilus</i>	Warbler, Willow	Unlisted	LC
<i>Platalea alba</i>	Spoonbill, African	Unlisted	LC
<i>Plectropterus gambensis</i>	Goose, Spur-winged	Unlisted	LC
<i>Plegadis falcinellus</i>	Ibis, Glossy	Unlisted	LC
<i>Plocepasser mahali</i>	Sparrow-weaver, White-browed	Unlisted	LC
<i>Ploceus cucullatus</i>	Weaver, Village	Unlisted	LC
<i>Ploceus intermedius</i>	Masked-weaver, Lesser	Unlisted	LC
<i>Ploceus velatus</i>	Masked-weaver, Southern	Unlisted	LC
<i>Podiceps cristatus</i>	Grebe, Great Crested	Unlisted	LC
<i>Pogoniulus chrysoconus</i>	Tinkerbird, Yellow-fronted	Unlisted	LC
<i>Porphyrio madagascariensis</i>	Swamphen, African Purple	Unlisted	Unlisted
<i>Prinia flavicans</i>	Prinia, Black-chested	Unlisted	LC
<i>Prinia subflava</i>	Prinia, Tawny-flanked	Unlisted	LC
<i>Prionops plumatus</i>	Helmet-shrike, White-crested	Unlisted	LC
<i>Prodotiscus regulus</i>	Honeybird, Brown-backed	Unlisted	LC
<i>Psophocichla litsipsirupa</i>	Thrush, Groundscraper	Unlisted	Unlisted
<i>Pternistis natalensis</i>	Spurfowl, Natal	Unlisted	LC
<i>Pternistis swainsonii</i>	Spurfowl, Swainson's	Unlisted	LC
<i>Pterocles gutturalis</i>	Sandgrouse, Yellow-throated	NT	LC
<i>Pycnonotus nigricans</i>	Bulbul, African Red-eyed	Unlisted	LC
<i>Pycnonotus tricolor</i>	Bulbul, Dark-capped	Unlisted	Unlisted
<i>Pytilia melba</i>	Pytilia, Green-winged	Unlisted	LC
<i>Quelea quelea</i>	Quelea, Red-billed	Unlisted	LC
<i>Recurvirostra avosetta</i>	Avocet, Pied	Unlisted	LC



<i>Rhinopomastus cyanomelas</i>	Scimitarbill, Common	Unlisted	LC
<i>Riparia paludicola</i>	Martin, Brown-throated	Unlisted	LC
<i>Sarkidiornis melanotos</i>	Duck, Comb	Unlisted	LC
<i>Saxicola torquatus</i>	Stonechat, African	Unlisted	LC
<i>Scopus umbretta</i>	Hamerkop, Hamerkop	Unlisted	LC
<i>Sigelus silens</i>	Flycatcher, Fiscal	Unlisted	LC
<i>Spermestes cucullatus</i>	Mannikin, Bronze	Unlisted	Unlisted
<i>Sporopipes squamifrons</i>	Finch, Scaly-feathered	Unlisted	LC
<i>Stenostira scita</i>	Flycatcher, Fairy	Unlisted	LC
<i>Streptopelia capicola</i>	Turtle-dove, Cape	Unlisted	LC
<i>Streptopelia semitorquata</i>	Dove, Red-eyed	Unlisted	LC
<i>Streptopelia senegalensis</i>	Dove, Laughing	Unlisted	LC
<i>Struthio camelus</i>	Ostrich, Common	Unlisted	LC
<i>Sylvietta rufescens</i>	Crombec, Long-billed	Unlisted	LC
<i>Tachybaptus ruficollis</i>	Grebe, Little	Unlisted	LC
<i>Tachymartia melba</i>	Swift, Alpine	Unlisted	LC
<i>Tchagra australis</i>	Tchagra, Brown-crowned	Unlisted	LC
<i>Telophorus sulfureopectus</i>	Bush-shrike, Orange-breasted	Unlisted	LC
<i>Terpsiphone viridis</i>	Paradise-flycatcher, African	Unlisted	LC
<i>Thalassornis leuconotus</i>	Duck, White-backed	Unlisted	LC
<i>Threskiornis aethiopicus</i>	Ibis, African Sacred	Unlisted	LC
<i>Tockus damarensis</i>	Hornbill, Damara	Unlisted	LC
<i>Tockus damarensis/erythrorhynchus</i>	Hornbill, Hybrid Damara/Red-billed	Unlisted	Unlisted
<i>Tockus erythrorhynchus</i>	Hornbill, Red-billed	Unlisted	LC
<i>Tockus leucomelas</i>	Hornbill, Southern Yellow-billed	Unlisted	LC
<i>Tockus nasutus</i>	Hornbill, African Grey	Unlisted	LC
<i>Trachyphonus vaillantii</i>	Barbet, Crested	Unlisted	LC
<i>Treron calvus</i>	Green-pigeon, African	Unlisted	LC
<i>Tricholaema leucomelas</i>	Barbet, Acacia Pied	Unlisted	LC
<i>Tringa glareola</i>	Sandpiper, Wood	Unlisted	LC
<i>Tringa nebularia</i>	Greenshank, Common	Unlisted	LC
<i>Tringa stagnatilis</i>	Sandpiper, Marsh	Unlisted	LC
<i>Turdoides bicolor</i>	Babbler, Southern Pied	Unlisted	LC
<i>Turdoides jardineii</i>	Babbler, Arrow-marked	Unlisted	LC
<i>Turdus libonyanus</i>	Thrush, Kurrichane	Unlisted	Unlisted
<i>Turdus smithi</i>	Thrush, Karoo	Unlisted	LC
<i>Turnix sylvaticus</i>	Buttonquail, Kurrichane	Unlisted	LC
<i>Turtur chalcospilos</i>	Wood-dove, Emerald-spotted	Unlisted	LC





## WSP

<i>Tyto alba</i>	Owl, Barn	Unlisted	LC
<i>Tyto capensis</i>	Grass-owl, African	<b>VU</b>	LC
<i>Upupa africana</i>	Hoopoe, African	Unlisted	Unlisted
<i>Uraeginthus angolensis</i>	Waxbill, Blue	Unlisted	LC
<i>Urocolius indicus</i>	Mousebird, Red-faced	Unlisted	LC
<i>Vanellus armatus</i>	Lapwing, Blacksmith	Unlisted	LC
<i>Vanellus coronatus</i>	Lapwing, Crowned	Unlisted	LC
<i>Vanellus senegallus</i>	Lapwing, African Wattled	Unlisted	LC
<i>Vidua chalybeata</i>	Indigobird, Village	Unlisted	LC
<i>Vidua funerea</i>	Indigobird, Dusky	Unlisted	LC
<i>Vidua macroura</i>	Whydah, Pin-tailed	Unlisted	LC
<i>Vidua paradisaea</i>	Paradise-whydah, Long-tailed	Unlisted	LC
<i>Zosterops virens</i>	White-eye, Cape	Unlisted	LC



## APPENDIX C: EXPECTED MAMMAL SPECIES

Species	Common name	Conservation Status	
		Regional (SANBI, 2016)	IUCN (2017)
<i>Acomys spinosissimus</i>	Spiny Mouse	LC	LC
<i>Aethomys chrysophilus</i>	Red Veld Rat	LC	LC
<i>Aethomys ineptus</i>	Tete Veld Rat	LC	LC
<i>Aethomys namaquensis</i>	Namaqua Rock Rat	Unlisted	LC
<i>Aonyx capensis</i>	Cape Clawless Otter	NT	NT
<i>Atelerix frontalis</i>	South African Hedgehog	NT	LC
<i>Atilax paludinosus</i>	Water Mongoose	LC	LC
<i>Canis mesomelas</i>	Black-backed jackal	LC	LC
<i>Caracal caracal</i>	Caracal	LC	LC
<i>Chlorocebus pygerythrus</i>	Vervet Monkey	LC	LC
<i>Civettictis civetta</i>	African Civet	LC	LC
<i>Cloeotis percivali</i>	Short-eared Trident Bat	EN	LC
<i>Crocidura cyanea</i>	Reddish-grey Musk Shrew	LC	LC
<i>Crocidura fuscomurina</i>	Tiny Musk Shrew	LC	LC
<i>Crocidura hirta</i>	Lesser Red Musk Shrew	LC	LC
<i>Crocidura mariquensis</i>	Swamp Mush Shrew	NT	LC
<i>Crocidura silacea</i>	Lesser Grey-Brown Musk Shrew	LC	LC
<i>Cynictis penicillata</i>	Yellow Mongoose	LC	LC
<i>Damaliscus lunatus</i>	Tsessebe	VU	LC
<i>Dendromus melanotis</i>	Grey Climbing Mouse	LC	LC
<i>Elephantulus brachyrhynchus</i>	Short-snouted Sengi	LC	LC
<i>Elephantulus myurus</i>	Eastern Rock Sengi	LC	LC
<i>Eptesicus hottentotus</i>	Long-tailed Serotine Bat	LC	LC
<i>Felis nigripes</i>	Black-footed Cat	VU	VU
<i>Felis silvestris</i>	African Wildcat	LC	LC
<i>Galago moholi</i>	Southern Lesser Galango	LC	LC
<i>Genetta genetta</i>	Small-spotted Genet	LC	LC
<i>Gerbilliscus brantsii</i>	Highveld Gerbil	LC	LC
<i>Gerbilliscus leucogaster</i>	Bushveld Gerbil	LC	LC
<i>Graphiurus microtis</i>	Large Savanna African Dormouse	LC	LC
<i>Graphiurus platyops</i>	Rock Dormouse	LC	LC
<i>Helogale parvula</i>	Dwarf Mongoose	LC	LC
<i>Herpestes sanguineus</i>	Slender Mongoose	LC	LC
<i>Hipposideros caffer</i>	Sundevall's Leaf-nosed Bat	LC	LC
<i>Hystrix africae australis</i>	Cape Porcupine	LC	LC
<i>Ictonyx striatus</i>	Striped Polecat	LC	LC
<i>Kerivoula lanosa</i>	Lesser Woolly Bat	LC	LC
<i>Lemniscomys rosalia</i>	Single-striped Mouse	LC	LC
<i>Leptailurus serval</i>	Serval	NT	LC



## WSP

<i>Lepus saxatilis</i>	Scrub Hare	LC	LC
<i>Lepus victoriae</i>	African Savanna Hare	LC	LC
<i>Mastomys coucha</i>	Multimammate Mouse	LC	LC
<i>Mellivora capensis</i>	Honey Badger	LC	LC
<i>Mungos mungo</i>	Banded Mongoose	LC	LC
<i>Mus indutus</i>	Desert Pygmy Mouse	LC	LC
<i>Myotis tricolor</i>	Temnick's Hairy Bat	LC	LC
<i>Neoromicia capensis</i>	Cape Serotine Bat	LC	LC
<i>Nycteris thebaica</i>	Egyptian Slit-faced Bat	LC	LC
<i>Oreotragus oreotragus</i>	Klipspringer	LC	LC
<i>Orycteropus afer</i>	Aardvark	LC	LC
<i>Otocyon megalotis</i>	Bat Eared Fox	LC	LC
<i>Otomys angoniensis</i>	Angoni Vlei Rat	LC	LC
<i>Panthera pardus</i>	Leopard	VU	VU
<i>Papio ursinus</i>	Chacma Baboon	LC	LC
<i>Parahyaena brunnea</i>	Brown Hyaena	NT	NT
<i>Paraxerus cepapi</i>	Tree Squirrel	LC	LC
<i>Pedetes capensis</i>	Springhare	LC	LC
<i>Phacochoerus africanus</i>	Common Warthog	LC	LC
<i>Poecilogale albinucha</i>	African Striped Weasel	NT	LC
<i>Procavia capensis</i>	Rock Hyrax	LC	LC
<i>Proteles cristata</i>	Aardwolf	LC	LC
<i>Raphicerus campestris</i>	Steenbok	LC	LC
<i>Rattus rattus</i>	House Rat	Unlisted	LC
<i>Rhabdomys pumilio</i>	Xeric Four-Striped Mouse	LC	LC
<i>Rhinolophus darlingi</i>	Darling's Horse Shoe Bat	LC	LC
<i>Rhinolophus simulator</i>	Bushveld Horseshoe Bat	LC	LC
<i>Saccostomus campestris</i>	Pouched Mouse	LC	LC
<i>Sauromys petrophilus</i>	Flat Headed Free-tail Bat	LC	LC
<i>Scotophilus dinganii</i>	Yellow House Bat	LC	LC
<i>Smutsia temminckii</i>	Temminck's Ground Pangolin	VU	VU
<i>Steatomys pratensis</i>	Fat Mouse	LC	LC
<i>Suncus varilla</i>	Lesser Dwarf Shrew	LC	LC
<i>Suricata suricatta</i>	Suricate	LC	LC
<i>Sylvicapra grimmia</i>	Common Duiker	LC	LC
<i>Syncerus caffer caffer</i>	Southern Savannah Buffalo	LC	LC
<i>Tadarida aegyptiaca</i>	Egyptian Free-tailed Bat	LC	LC
<i>Taphozous mauritanus</i>	Mauritian Tomb Rat	LC	LC
<i>Thallomys paedulus</i>	Tree Rat	LC	LC
<i>Tragelaphus scriptus</i>	Bushbuck	Unlisted	LC
<i>Vulpes chama</i>	Cape Fox	LC	LC
<i>Xerus inauris</i>	Cape Ground Squirrel	LC	LC



## APPENDIX D: EXPECTED REPTILE AND AMPHIBIAN SPECIES

Species	Common name	Conservation Status	
		Regional (Bates et al., 2014)	Global (IUCN, 2017)
<i>Acanthocercus atricollis atricollis</i>	Southern Tree Agama	LC	Unlisted
<i>Acontias percivali</i>	Percival's Legless Skink	Unlisted	LC
<i>Afrotrophlops bibronii</i>	Bibron's Blind Snake	LC	LC
<i>Agama aculeata distanti</i>	Eastern Ground Agama	Unlisted	LC
<i>Aparallactus capensis</i>	Black-headed Centipede-Eater	LC	LC
<i>Bitis arietans arietans</i>	Puff Adder	LC	Unlisted
<i>Chamaeleo dilepis</i>	Common Flap-neck Chameleon	LC	LC
<i>Crotaphopeltis hotamboeia</i>	Red-Lipped Snake	LC	Unlisted
<i>Dasypeltis scabra</i>	Rhombic Egg-eater	LC	LC
<i>Dendroaspis polylepis</i>	Black Mamba	LC	LC
<i>Gerrhosaurus flavigularis</i>	Yellow-throated Plated Lizard	LC	Unlisted
<i>Gonionotophis capensis capensis</i>	Common File Snake	LC	LC
<i>Hemidactylus mabouia</i>	Common Tropical House Gecko	LC	Unlisted
<i>Homopholis arnoldi</i>		Unlisted	Unlisted
<i>Kinixys lobatsiana</i>	Lobatse Hinged-back Tortoise	Unlisted	LC
<i>Kinixys spekii</i>	Speke's Hinged-back Tortoise	LC	Unlisted
<i>Lygodactylus capensis capensis</i>	Common Dwarf Gecko	LC	Unlisted
<i>Naja annulifera</i>	Snouted Cobra	LC	Unlisted
<i>Naja mossambica</i>	Mozambique Spitting Cobra	LC	Unlisted
<i>Nucras holubi</i>	Holub's Sandveld Lizard	LC	Unlisted
<i>Pelusios sinuatus</i>	Serrated Hinged Terrapin	LC	Unlisted
<i>Philothamnus semivariegatus</i>	Spotted Bush Snake	LC	Unlisted
<i>Prosymna ambigua</i>	East African Shovel-snout	Unlisted	LC
<i>Psammophis angolensis</i>	Dwarf Sand Snake	LC	Unlisted
<i>Psammophis brevirostris</i>	Short Snouted Grass Snake	Unlisted	LC
<i>Psammophis subtaeniatus</i>	Western Yellow-bellied Sand Snake	LC	LC
<i>Psammophylax tritaeniatus</i>	Striped Grass Snake	LC	LC
<i>Pseudaspis cana</i>	Mole Snake	LC	Unlisted
<i>Python natalensis</i>	South African Python	LC	Unlisted
<i>Stigmochelys pardalis</i>	Leopard Tortoise	LC	LC
<i>Telescopus semiannulatus semiannulatus</i>	Eastern Tiger Snake	LC	Unlisted
<i>Thelotornis capensis</i>	Southern Twig Snake	Unlisted	LC
<i>Trachylepis punctatissima</i>	Speckled Rock Skink	LC	LC



## WSP

<i>Varanus albigularis</i> <i>albigularis</i>	Southern Rock Monitor	LC	Unlisted
<i>Amietia angolensis</i>	Common River Frog	Unlisted	LC
<i>Amietia delalandii</i>	Delalande's River Frog	Unlisted	Unlisted
<i>Breviceps adspersus</i>	Bushveld Rain Frog	LC	LC
<i>Cacosternum boettgeri</i>	Boettger's Caco	LC	LC
<i>Chiromantis xerampelina</i>	Southern Foam Nest Frog	LC	LC
<i>Kassina senegalensis</i>	Bubbling Kassina	LC	LC
<i>Phrynobatrachus natalensis</i>	Snorring Puddle Frog	LC	LC
<i>Phrynomantis bifasciatus</i>	Banded Rubber Frog	LC	LC
<i>Poyntonophrynus fenoulheti</i>	Northern Pygmy Toad	LC	LC
<i>Ptychadena anchietae</i>	Plain Grass Frog	LC	LC
<i>Ptychadena mossambica</i>	Broad-banded Grass Frog	LC	LC
<i>Pyxicephalus adspersus</i>	Giant Bullfrog	NT	LC
<i>Pyxicephalus edulis</i>	Edible Bullfrog	LC	LC
<i>Schismaderma carens</i>	Red Toad	LC	LC
<i>Sclerophrys capensis</i>	Raucous Toad	Unlisted	LC
<i>Sclerophrys garmani</i>	Eastern Olive Toad	LC	LC
<i>Sclerophrys gutturalis</i>	Guttural Toad	LC	LC
<i>Sclerophrys poweri</i>	Western Olive Toad	LC	LC
<i>Tomopterna cryptotis</i>	Tremolo Sand Frog	LC	LC
<i>Tomopterna natalensis</i>	Natal Sand Frog	LC	LC
<i>Tomopterna tandyi</i>	Tandy's Sand Frog	LC	LC
<i>Xenopus laevis</i>	Common Platanna	LC	LC

