

**GENERAL ECOLOGICAL SPECIALIST REPORT**



**PROPOSED DEVELOPMENT OF LOW INCOME HOUSING IN LADYSMITH, EZAKHENI C,  
KWAZULU NATAL PROVINCE**



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**DATE: September 2019**

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## **DECLARATION OF INDEPENDENCE**

I, Khantshi Ndivhuho, declare that I:

- 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.

**Khantshi Ndivhuho** (Hons. BSc Env.; LaRSSA 38540; SACNASP 122250)



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**20/ 09 / 2019**

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## ABBREVIATIONS

BGIS	Biodiversity Geographical Information System
CARA	Conservation of Agricultural Resources
CBA	Critical Biodiversity Area
CR	Critically Endangered
DEA	Department of Environmental Affairs
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EN	Endangered
ESA	Ecological support area
MM	Millimetres
NEMA	National Environmental Management Act, 107 of 1998
NEMBA	National Environmental Management Biodiversity Act, 10 of 2004
ONA	Other Natural Area
PA	Protected Area
PRECIS	Pretoria Computerised Information System
QDGC	Quarter Degree Grid Cell
SANBI	South African National Biodiversity Institute
SARCA	Southern African Reptile Conservation Assessment
SFSD	Strategic Framework for Sustainable Development
TTF	Thoma Tree Family
VM	Virtual Museum
VU	Vulnerable
KZN	KwaZulu Natal

## **1. INTRODUCTION**

### **1.1. Background**

ThomaTree Family was appointed to conduct a terrestrial and impact assessment for the Basic Assessment process in support of the development of township establishment. The total application area is approximately 09 hectares in extent. It is situated 15 kilometres south-east of Ladysmith in the KwaZulu-Natal Province. The application is for the development of 150 low income housing structures, installation of services and access road.

Terrestrial biodiversity surveys were conducted on the 11<sup>th</sup> March 2019, 29<sup>th</sup>, and 30<sup>th</sup> of May 2019 by ecologists. The survey primarily focussed on the project area footprint. Furthermore, the identification and description of any sensitive receptors were recorded across the project area, and the manner in which these sensitive receptors may be affected by the activity was also investigated.

This report, should inform and guide the Environmental Assessment Practitioner (EAP), enabling informed decision making as to the ecological viability of the proposed development and to provide an opinion on the whether any environmental authorisation is required for the proposed development.

### **1.2. Terms of reference**

The terms of reference for this investigation are limited to a Terrestrial Biodiversity Assessment with the following objectives:

- To assess the proposed development in order to determine the general ecological state of the proposed project area;
- To survey and delineate environmentally sensitive areas;
- To assess the proposed development in terms of faunal and floral taxa including the potential for species to occur;
- To assess and identify the potential impacts that may arise from the proposed project on the fauna and flora taxa;
- To provide mitigation measures to prevent and/or mitigate identified environmental impacts that may occur due to the proposed project; and
- The provision of an assessment report, indicate findings, recommendations and maps indicating sensitivities and/or no-go areas.



### **1.3. Specialist Report Requirements**

With reference to Appendix 6 of the EIA regulations (2014) the specialist declaration is included on this report and details of the specialists are included above.

## **2. METHODS AND REPORTING**

### **2.1. Assumptions, uncertainties and limitations**

The results and recommendations of the report are based on the actual site status. Assumptions that are made and uncertainties that are encountered are indicated in the report (where applicable). As indicated under the relevant sections in the report consultation of authorities' data bases forms part of this report.

The faunal survey was not a comprehensive specialist survey but rather an overview of the available habitats and their potential to be utilized by fauna. No nocturnal surveys were conducted.

#### **2.1. General**

The author relied on aerial images and Environmental Screening tool to remotely assess the site sensitivity before the actual on-site investigation and to get familiarized with the different features and vegetation communities (habitats) present within the affected areas.

The information thus gathered was used for selecting survey sites and to identify possible sensitive areas. Problematic, as well as potential sensitive areas were identified during the site assessment and these were thoroughly investigated as explained in the sections below. All literature and other references used to support findings and to assist in making conclusions are listed.

#### **2.2. Vegetation & Habitats**

Floral diversity was determined by completing survey transects and sample sites along all the different habitats within the physiographic zones represented in the study area (Deal *et al.* 1989). In order to attain scientifically reliable results, obviously distinct vegetation communities were surveyed by selecting representative sites in each homogenous unit (Mathews *et al.* 1992). The vegetation units of Mucina & Rutherford (2006) are used as reference but where necessary communities are named according to a unit's diagnostic floral feature and/or topographical setting or other biophysical features (or a combination of several descriptive features). By combining the available literature with the survey results, stratification of vegetation communities was possible. The survey transects and sites in the affected areas were also intensively searched for

important species and the potential for Red Data Listed (RDL) and other important species were established and cross referenced with PRECIS Data for the relevant quarter degree grid/s (POSA) as obtained from the SANBI data base. The aim was to identify different vegetation types and to establish their integrity and representation in the study area.

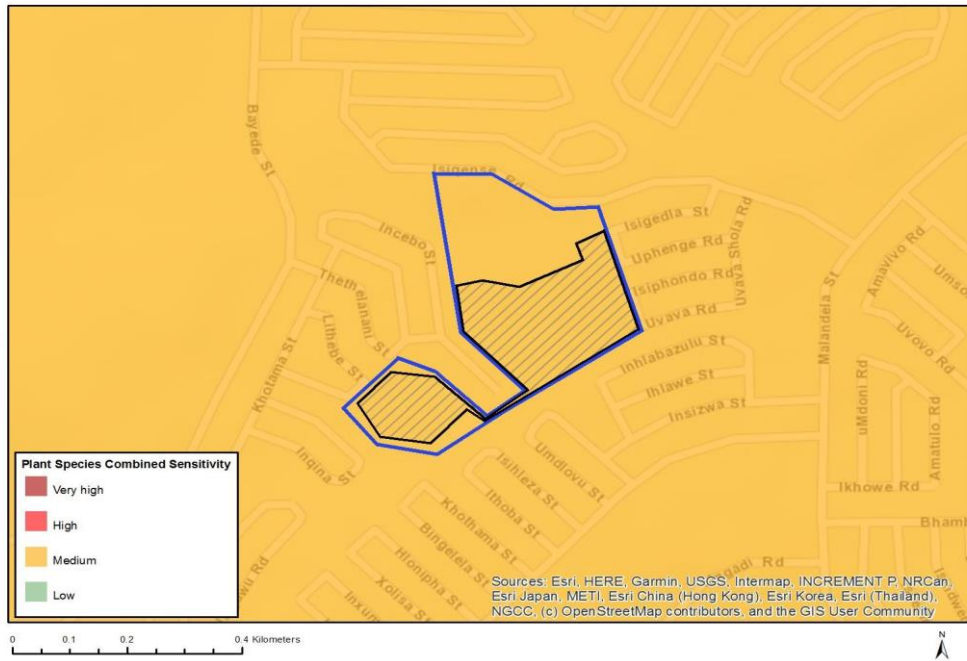


Figure 1 Plant Species

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

**Sensitivity Features:**

Sensitivity	Feature(s)
Medium	Sensitive species 275
Medium	Sensitive species 654

**2.3. Terrestrial Fauna**

The fauna investigation is based on a desktop study and environmental screening tool verified by cross reference with available habitats of the study area in order to establish the faunal potential. All fauna that were observed during field trips and floral surveys were also recorded. However, selected survey sites were searched for fauna and habitats were identified during the vegetation surveys so as to establish the faunal potential of a particular area.

## 2.4. Ecological importance and sensitivity rating of habitats

By considering the results of all the above investigations, the authors allocate a qualitative sensitivity rating to the habitat that were identified, based upon its ecological importance and biodiversity value. A qualitative method was chosen at the first stage of assessment instead of a quantitative method in order to simplify the procedure of assessment. In order to simplify the decision-making process, a scale of **Low, Medium, High and Very High** is used, based upon biodiversity value and ecological functions. This method is used as a first level of expressing the sensitivity of a specific component and is not used in comparative assessments of alternatives where a quantitative approach will be more appropriate.



Figure 2: Terrestrial Biodiversity Theme Sensitivity

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	None

Table 1: Ecological Importance /Biodiversity Sensitivity

Ecological Importance of Terrestrial and Riparian Communities	Sensitivity Rating
a unique habitat that serve as habitat for rare/endorsed species or perform critical roles.	Very Low

Areas of natural or transformed land where a high impact is anticipated due to the high biodiversity value, sensitivity or important ecological role of the area.	Very Low
Areas of natural or previously transformed land where the impacts are likely to be largely local and the risk of secondary impact such as erosion low.	Medium
Units with a low sensitivity where there is likely to be a negligible impact on ecological processes and terrestrial biodiversity. This category is reserved specifically for areas where the natural vegetation has already been transformed, usually for agricultural purposes.	Low

Following the identification of the different ecological features of the site, lists of mammals, reptiles, amphibians and birds observed or likely to be associated with the different habitats present were compiled. These lists were compiled based on the observations made during the site visit as well as available literature sources (Friendmann & Daly 2004) and spatial databases (SANBI's SIBIS and BGIS databases). The lists provided are based on species which are known to occur in the broad geographical area as well as an assessment of the availability and quality of suitable habitat at the site. For each species, the likelihood that it occurs at the site was rated according to the following scale:

- **Low:** The available habitat does not appear to be suitable for the species and it is unlikely that the species occurs at the site.
- **Medium:** The habitat is broadly suitable or marginal and the species may occur at the site.
- **High:** There is an abundance of suitable habitat at the site and it is highly probable that the species occurs there.
- **Definite:** Species that were directly or indirectly (spoor, droppings, characteristic diggings, burrows etc) observed at the site.

The conservation status of each species is also listed, based on the IUCN Red List Categories and Criteria version 3.1 (2010) and where species have not been assessed under these criteria, the CITES status is reported where possible. These lists are adequate for mammals, amphibians and birds, the majority of which have been assessed, however the majority of reptiles have not been assessed and therefore, it is not adequate to assess the potential impact of the development on reptiles, based on those with a listed conservation status alone. In order to address this shortcoming, the distribution of reptiles was also taken into account such that any narrow endemics or species with highly specialized habitat requirements occurring at the site were noted.

## **2.5. Relevant Aspects of the Development**

Information provided to the consultant indicates that the development of the site as residential area will involve the following activities and the construction of the following infrastructures:

- Access Roads
- Power, water and sewer reticulation
- A number of temporary activities will take place during construction of the houses. These will include:
- A temporary laydown area of up to 80 m x 20m (hard standing) may be constructed for the storage of construction vehicles and materials.

## **2.6. Scope of Work**

The Terms of Reference included the following:

- Desktop description of the baseline receiving environment specific to the field of expertise (general surrounding area as well as site specific environment);
- Identify significant 'ecological, botanical and faunal features within the proposed development areas;
- Identification of conservation significant habitats around the project area which might be impacted by the proposed development;
- Site visit to verify desktop information;
- Screening to identify any critical issues that may result in project delays or rejection of the application; and

## **Vegetation Study**

- Carry out fieldwork to locate and describe the current state of vegetation on the study area, key focus on the impact footprint(s) for site, so that there is a baseline description/status quo against which impacts can be identified and measured.
- Determine the species present and localities within each vegetation types.
- Generate a vegetation map showing the site in relation to any Critical Biodiversity Areas and links to ecological corridors and support areas, vegetation sensitivity, disturbed, transformed and potential "no-go" areas.
- Provide site photos that show the current state of the vegetation (i.e. natural, transformed, disturbed etc.)
- A detailed list of species of special concern.

- Determine alien species present; their distribution within the study area and recommended management actions.
- A description of different micro-habitats, and the species associated with those habitats.
- Describe the potential direct, indirect and cumulative negative and positive impacts of the proposed activity on vegetation species during the construction, operation and decommissioning phases of the project.
- Identification of issues and potential direct, indirect and cumulative biodiversity impacts, which are to be considered in combination with any additional relevant issues that may be raised through the public consultation process. These include:
  - Recommendations for mitigatory measures to minimise impacts identified.
  - An outline of additional management guidelines.
  - Provide monitoring requirements, mitigation measures and recommendations in a table format as input into the Environmental Management Plan (EMP), as well as generic rehabilitation and re-vegetation guidelines.

### **Fauna/ Study**

- Carry out fieldwork to describe and assesses the current state of terrestrial fauna in the area so that there is a baseline description/status quo against which impacts can be identified and measured.
- Conduct a faunal assessment that can be integrated into the ecological study.
- Describe the existing impacts of current land use as they affect the fauna.
- Describe the potential direct, indirect and cumulative negative and positive impacts of the proposed activity on inhabitant and reliant faunal species during the construction, operation and decommissioning phases of the project.
- A description of species composition and conservation status in terms of protected, endangered or vulnerable faunal species.
- This description will include species which are likely to occur within, traverse across or forage within the proposed project area, as well as species which may not necessarily occur on site, but which are likely to be impacted upon as a result of the proposed development.
- Identification of issues and potential direct, indirect and cumulative biodiversity impact which are to be considered in combination with any



additional relevant issues that may be raised through the public consultation process.

### 3. DESCRIPTION OF THE AFFECTED ENVIRONMENT

#### 3.1. Location

The proposed development is situated approximately 15 kilometres south-east of Ladysmith in the Alfred Duma local municipality of KwaZulu Natal province. The land uses surrounding the project area consist mainly of township area with connected houses. Infrastructure such as, gravel roads occur within the vicinity of the project area. The infrastructure for the proposed development will only impact on a small portion of the overall area.

	
<p>A Spiky Berkheya herbaceous on the site.</p>	<p>The patch of emergent (wetland)</p>
	
<p>Picture showing disturbed area on the site.</p>	<p>Illegal dumping on site</p>

**Figure 3: Typical Views From The Study Area**

### **3.2. Climatic Conditions**

Ezakheni C falls within the summer rainfall region of South Africa, in which more than 80% of the annual rainfall occurs from October to March. 85% of the rain falls during summer thunderstorms occurring every 3 to 4 days in summer. They occur in the form of conventional thunderstorms, are usually of short duration and high intensity and accompanied by lightning, strong winds, and sometimes hail. Temperatures in this climatic zone are generally mild, although low minima can be experienced during the winter months due to clear night skies. Temperatures can vary between 27°C (maximum) to 24°C (minimum) in summer and 25°C (maximum) to 15°C (minimum) in winter.

### **3.3. Land Use**

The main land-use on site is the grassland with dense bushes occurring along the streams. Part of the site is under settlements, cropping and timber plantations. Maize is the main crop in the applied project by the individual households on their individual arable. The livestock production usually takes the form of traditional patterns of cattle and goat raising based almost entirely on veld grazing.

### **3.4. Overview of the Biome type**

Mucina and Rutherford (2006) described the project area as falling within the grassland biome. The Grassland Biome is found chiefly on the high central plateau of South Africa, and the inland areas of KwaZulu Natal and the Eastern Cape. This biome (also known locally as Grassveld) is dominated by a single layer of grasses. The amount of cover depends on rainfall and the degree of grazing. Trees are absent, except in a few localized habitats. Geophytes (bulbs) are often abundant. Frosts, fire and grazing maintain the grass dominance and prevent the establishment of trees.

There are two categories of grass plants: sweet grasses have lower fibre content, maintain their nutrients in the leaves in winter and are therefore palatable to stock. Sour grasses have higher fibre content and tend to withdraw their nutrients from the leaves during winter so that they are unpalatable to stock. At higher rainfall and on more acidic soils, sour grasses prevail, with 625 mm per year taken as the level at which unpalatable grasses predominate. C4 grasses dominate throughout the biome, except at the highest altitudes where C3 grasses become prominent.



The Grassland Biome is the cornerstone of the maize crop, and many grassland types have been converted to this crop. Sorghum, wheat and sunflowers are also farmed on a smaller scale. Urbanization is a major additional influence on the loss of natural areas - the Witwatersrand is centred in this biome. The Grassland Biome is considered to have an extremely high biodiversity, second only to the Fynbos Biome. Rare plants are often found in the grasslands, especially in the escarpment area. These rare species are often endangered, comprising mainly endemic geophytes or dicotyledonous herbaceous plants. Very few grasses are rare or endangered.

### 3.5. Vegetation

Protected tree species whose range include the development site include: *Pachycarpus rostratus*, *Schizoglossum ingomense*, *Helichrysum pannosum*, *Senecio ngoyanus*, *Brachystelma christianae*, *Cineraria atriplicifolia*, *Aloe Spectabilis*, *Brachystelma modestum*, *Aloe dominella*, *Gasteria batesiana var batesiana*.

Through a combination of biophysical features of available habitats and the results of field investigations the possibility of RDL species occurring on site was assessed. No RDL species were identified on the affected area but a list of potential RDL species was compiled (Table3.1)

### 3.6. Vegetation Types

The grassland biome comprises many different vegetation types. The project area is situated across several different vegetation types; Moist Hinterland Grassland (which constitutes the majority of the area), and Midlands Mistbelt Grassland vegetation types, according to Mucina & Rutherford (2006). The proposed infrastructure footprint is situated completely within the Locality Grassland vegetation type.

**Table 2: Plant Species Of Conversation Concern (SCC) Expected To Occur In The Project Area (BODATSA-POSA, 2016)**

Family	Scientific Name	Author	IUCN status	Habitat preference	Likelihood of Occurrence
Apocynaceae	<i>Pachycarpus rostratus</i>	N.E.Br.	CR	Unknown, probably grassland.	Moderate
Apocynaceae	<i>Schizoglossum ingomense</i>	N.E.Br.	EN	Grasslands near streams and on forest margins.	Moderate
Asteraceae	<i>Helichrysum pannosum</i>	DC.	EN	Grassland, often on hill	Moderate

				slopes near forest patches.	
Asteraceae	<i>Senecio ngoyanus</i>	Hilliard	VU	Marshy ground near streams and rocky grassland.	Moderate
Apocynaceae	<i>Brachystelma christianeae</i>	Peckover	VU	Poor, greyish, sandy soil between sandstone rocks.	Moderate
Asteraceae	<i>Cineraria atriplicifolia</i>	DC.	VU	Grassland, open dry thornveld, or sometimes at the edges of thicket or forest or below steep cliffs in river valleys, 30800 m.	Moderate
Asphodelaceae	<i>Aloe Spectabilis</i>	Reynolds	NT	Hot, dry, rocky hill slopes.	High
Apocynaceae	<i>Brachystelma modestum</i>	R.A.Dyer	NT	Grassland grows in shallow soils among rocks, Natal Group Sandstone, 900-1 200 m.	Moderate
Asphdelaceae	<i>Aloe dominella</i>	Reynolds	NT	In grassland or thornveld, in hilly or gently undulating areas, often in rocky outcrops but can also occur in open grasslands and	Moderate

				along road reserves.	
Asphodelaceae	<i>Gasteria batesiana</i> var. <i>batesiana</i>	G.D.Rowley	NT	Dry places on rock outcrops and cliffs, 600900 m.	Moderate

The occurrence of alien invasive species and weeds is another important factor in this assessment. Alien invasive and weed species are listed in the Conservation of Agricultural Resources Act of 1983 (CARA) and the Mpumalanga Conservation Act (1998). The control by landowners of the presence and spreading of such species is regulated by these Acts. Several important exotic / invader species were recorded on the study area (Table 3).

**Table 3: Aliens, Weeds and Exotics, CARA Categories are Indicated Where Applicable.**

Name	Legislation	Status	Comments / GPS reference
<i>Dichrostachys cinerea</i>	CARA	Declared	Bush encroachment
<i>Acacia ataxacantha</i>	CARA	Declared	Bush encroachment
<i>Lantana camara</i>	CARA	Declared	Category 1 weed/invader

### 3.7. Broad vegetation classification

According Mucina and Rutherford (2006)) the site is located within the **Paulpietersburg Moist Grassland**. This vegetation unit occurs Found in the KwaZulu-Natal and Mpumalanga provinces, mainly in the broad surrounds of Piet Retief, Paulpietersburg, and Vryheid, extending westwards to east of Wakkerstroom. This unit occurs in the upper most catchments of the Pongola River.

The unit is mainly found on the undulating with moderately steep slopes, but valley basins are wide and flat and mountainous areas occur mostly along the northern and eastern boundary. Tall closed grassland rich in forbs and dominated by *Tristachya eucothrix*, *Themda triandra* and *Hyparrhenia hirta*. Evergreen woody vegetation is characteristic on rocky outcrops.

The unit is considered as **vulnerable** with a conservation target of 24%. Only a very small portion is statutorily conserved in Witbad, Vryheid Mountain, Paardeplaats and Phongola Bush Nature Reserves. About one third is already transformed by plantations or cultivated land. Heavy livestock grazing and altered fire regimes have greatly reduced the area of grasslands of high conservation value. Aliens such as species of Acacia, Eucalyptus and Pinus are a major concern in places. The erosion potential is very low.

### **3.8. Fauna**

The majority of mammals and reptiles are either very secretive, nocturnal, hibernate (reptiles), migrate (birds) or prefer specific habitat so sampling and identification was limited.

#### **3.8.1. Mammals**

Records of all mammal species recorded in the four quarter degree grid squares were obtained from the Virtual Museum (VM) website of the Animal Demographic Unit of University of Cape Town prior to the site visits. The site assessment was conducted for mammal species diversity by direct and indirect methods using mammal sightings, burrows, holes and also verified by mammal book (Skinner and Chimimba, 2005). No trapping was conducted during the field survey.

### 3.9. Wetland Baseline



Figure 4: Aquatic Biodiversity Theme Sensitivity

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

**Sensitivity Features:**

Sensitivity	Feature(s)
Low	Low Sensitivity Areas

The wetland type was identified, namely the Emergent wetland, Figure 5. presents the identified wetland within the assessment area. The wetland was defined as a small portion, and extend into the existing garden outside of the assessment area. According to the results generated from environmental screening report, there is a low sensitivity of a development on aquatic and terrestrial biodiversity.

Some of the identified wetland features are shown in Figure 5. below. Soil wetness was present but is limited to the very small part of the proposed site of the development. The soils dominating within the wetland area was the Dundee soil forms. Wetland vegetation was lacking and only one species was found “sedge” *Cyperus Polystachyos* (Figure 5.).



**Figure 5: Soil Wetness and Sedge**

### **3.10. Identification of Risks and Potential Impacts**

Prospective impacts on the terrestrial ecology of the site resulting from the development of the low-income housing include negative impacts on the following.

- Biodiversity.
  - ✓ the number of different species and individuals in a habitat or geographical area;
  - ✓ the variety of different habitats within an area;
  - ✓ the variety of interactions that occur between different species in a habitat; and
- Sensitive Habitats –impacts to ecologically sensitive habitats such as areas which are the habitat of rare or endangered species.
- Connectivity –reduction in the ability of animals to move about the landscape, this may impact ecosystem function as well as gene flow and other aspects of biodiversity.

In terms of the activities involved in the construction of the low-income housing, specific risks stem from the following activities.

- The clearing and levelling of land for the foundations of buildings and drive ways.
- The excavation of borrow pits.
- Increased risk of chemical contamination by construction vehicles.
- Disturbance of natural ecosystems, making them vulnerable to invasion by alien organisms
- Damaging plants and animals by construction as a result of the construction activities

#### 4. Key Legislative Requirements

The legislation, policies and guidelines listed below are applicable to the current project in terms of biodiversity and ecological support systems (Table 4.). The list below, although extensive, may not be exhaustive and other legislation, policies and guidelines may apply in addition to those listed below.

Explanation of certain documents, organisations or legislation is provided (below Table 1) where these have a high degree of relevance to the project and/or are referred to in this assessment.

**Table 4: A list Of Key Legislative Requirements Relevant to Biodiversity and Conservation in Kwazulu Natal.**

<b>INTERNATIONAL</b>	<p>Convention on Biological Diversity (CBD, 1993)</p> <p>The Convention on Wetlands (RAMSAR Convention, 1971)</p> <p>The United Nations Framework Convention on Climate Change (UNFCCC, 1994)</p> <p>The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 1973)</p>
<b>NATIONAL</b>	<p>Constitution of the Republic of South Africa (Act No. 108 of 2006)</p> <p>The National Environmental Management Act (NEMA) (Act No. 107 of 1998)</p> <p>The National Environmental Management Protected Areas Act (Act No. 57 of 2003)</p>
	<p>The National Environmental Management Biodiversity Act (Act No. 10 of 2004)</p> <p>The National Environmental Management: Waste Act, 2008 (Act 59 of 2008);</p> <p>The Environment Conservation Act (Act No. 73 of 1989) and associated EIA Regulations</p> <p>National Environmental Management Air Quality Act (No. 39 of 2004)</p> <p>National Protected Areas Expansion Strategy (NPAES)</p> <p>Environmental Conservation Act (Act No. 73 of 1983)</p>

	<p>Natural Scientific Professions Act (Act No. 27 of 2003)</p> <p>National Biodiversity Framework (NBF, 2009)</p> <p>National Veld and Forest Fire Act (101 of 1998)</p> <p>National Water Act, 1998 (Act 36 of 1998)</p> <p>National Freshwater Ecosystem Priority Areas (NFEPA's)</p> <p>National Spatial Biodiversity Assessment (NSBA)</p> <p>World Heritage Convention Act (Act No. 49 of 1999)</p> <p>National Heritage Resources Act, 1999 (Act 25 of 1999)</p> <p>Municipal Systems Act (Act No. 32 of 2000)</p> <p>Alien and Invasive Species Regulations, 2014</p> <p>South Africa's National Biodiversity Strategy and Action Plan (NBSAP)</p> <p>Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)</p> <p>White Paper on Biodiversity</p>
<b>PROVINCIAL</b>	<p>KwaZulu-Natal Environmental, Biodiversity and Protected Areas Management Bill, 2014</p> <p>KwaZulu-Natal Nature Conservation Management Act (No. 9 of 1997)</p> <p>KwaZulu-Natal Nature Conservation Management Amendment Act (No. 5 of 1999)</p> <p>KwaZulu-Natal Planning and Development Act (No. 6 of 2008)</p> <p>Local Government Municipal System's Act (No 32 of 2000)</p>

#### 4.1. National Level

- Constitution of the Republic of South Africa (Act 108 of 1996). The Bill of Rights, in the Constitution of South Africa states that everyone has a right to a nonthreatening environment and requires that reasonable measures be applied to protect the environment. This protection encompasses preventing pollution and promoting conservation and environmentally sustainable development;
- 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;



- National Forests Act, 1998 (Act 84 of 1998), specifically with reference to Protected Tree species;
- National Biodiversity Assessment (NBA): The National Biodiversity Assessment (NBA) was completed as a collaboration between the South African National Biodiversity Institute (SANBI), the Department of Environmental Affairs (DEA) and other stakeholders, including 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).

#### **4.2. Provincial and Municipal Level**

In addition to national legislation, South Africa's nine provinces have their own provincial biodiversity legislation, as nature conservation is a concurrent function of national and provincial government in terms of the Constitution (Act 108 of 1996).

#### **The KwaZulu-Natal Environmental, Biodiversity and Protected Areas Management Bill (2014)**

The KwaZulu-Natal Environmental, Biodiversity and Protected Areas Management Bill (2014) hereafter referred to as KZNEBPA, was used to evaluate species conservation status on a Provincial scale.

The KZNEBPA (2014) defines which species are to be protected and managed in terms of human use such as collecting, fishing, hunting, capture, transport and trade. It deals with rare and endangered species within the KZN Province and the powers needed to protect them from exploitation and damage.

KZNEBPA Categories:

- Schedule 3 – KwaZulu-Natal Protected Animal Species: A list of protected animal species, including a listing of certain prohibited and restricted activities with respect to such species;
- Schedule 4 – Restricted Use of Protected Animal Species: Schedule 4 lists the restricted use of protected animal species and provides for certain prohibited and restricted activities in such respect;
- Schedule 7 – KwaZulu-Natal Threatened Plant Species: Schedule 7 lists the threatened plant species and provides for certain prohibited and restricted activities with respect to such species; and

- Schedule 8 – KwaZulu-Natal Protected Plant Species: Schedule 8 lists the protected plant species and provides for certain prohibited and restricted activities with respect to such species.

In addition to the legal requirements, the following National and Regional reviews, reports and guidelines were taken into consideration:

- Guidelines for Biodiversity Impact Assessments in KZN (2013);
- KwaZulu-Natal Systematic Conservation Plan (KZNSCP, 2012).

## **5. IMPACT ASSESSMENT**

The Regulations in terms of Chapter 5 of the National Environmental Management, Act No. 107 of 1998 requires that a description must be given of the potential impacts the proposed development will have on the environment. The details indicated the identified impacts and their proposed mitigation measures.

### **5.1. Methodology**

Potential impacts were evaluated against the data captured during the fieldwork to identify relevance to the project area, specifically the proposed prospecting footprint. The relevant impacts were then subjected to a prescribed impact assessment methodology. Impacts were assessed in terms of the construction, operational, decommissioning, rehabilitation and closure phases. The operational phase refers to that phase of the project where the prospecting is being conducted and once complete, the decommissioning phase will begin.

It should be noted that the impacts described are not exhaustive, and more impacts may be identified at a later stage as more project specific information becomes available. Mitigation measures were only applied to impacts deemed relevant based on the impact analysis.

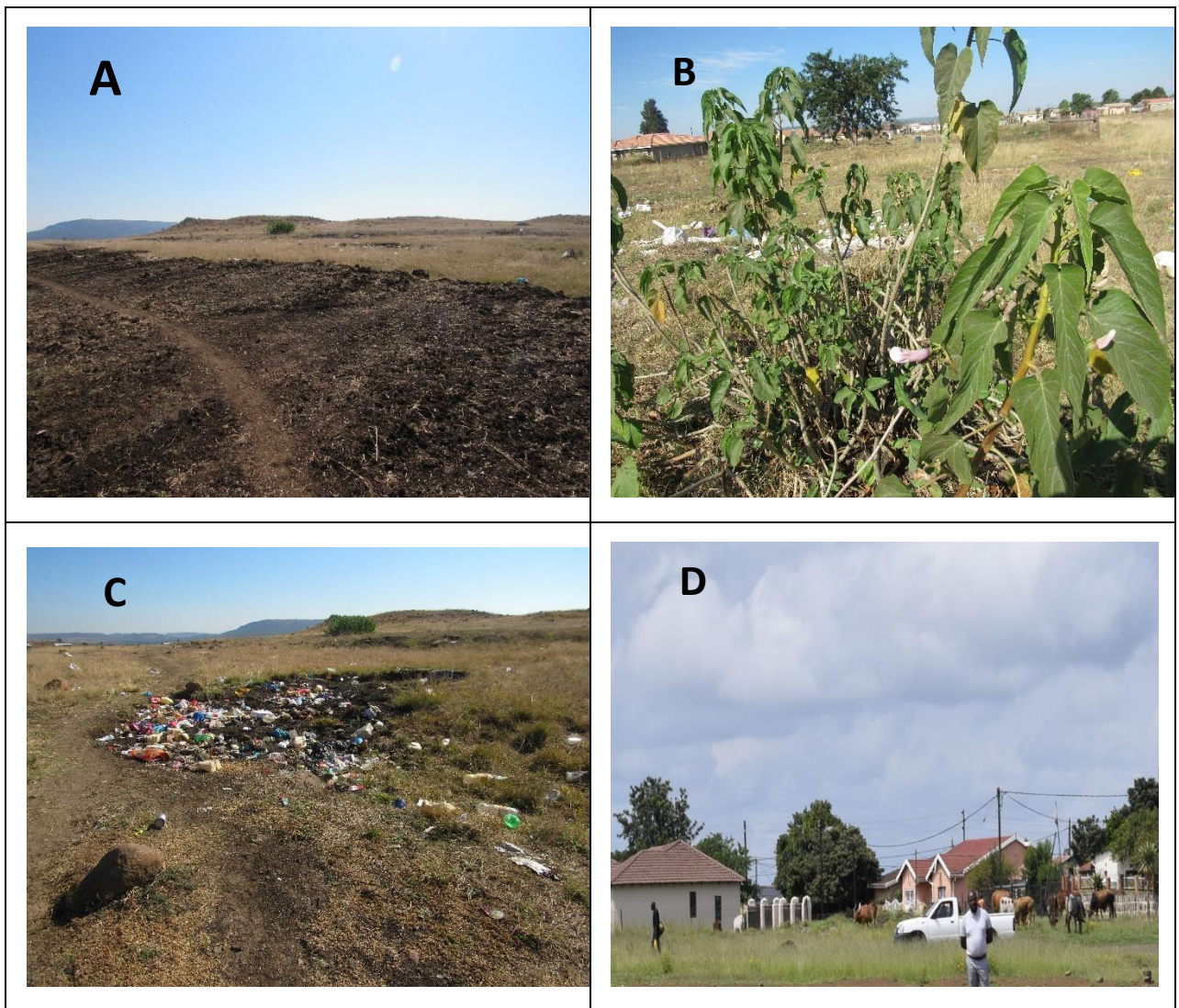
### **5.2. Purpose and Scope**

The standard impact assessment methodology may be used in the capture of generic anticipated impacts and potential mitigation measures for Basic Assessment Reports and Environmental Impact Assessment (EIA) Reports. The methodology described herein complies with the requirements of the EIA Regulations (2014), promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

### 5.3. Current Impacts

During the field survey, the current impacts that are having a negative impact on the area were identified, and are listed below and can be seen in Figure 6.

- Extensive erosion;
- Presence of alien and invasive plant species;
- Illegal dumping on the site; and
- Livestock (predominantly free ranging cattle and goats).



**Figure 6: Some Of The Current Impacts Identified Within The Project Area (April 2019). Prone to Extensive Erosion; A) Invasion of Alien species; B) Illegal Dumping; C) and Cattle Grazing D).**

#### **5.4. Identification of Additional Impacts**

The proposed development is associated with the following activities, namely the construction of an access road and digging of trenches. The proposed construction may result in loss and disturbance of habitats and displacement of fauna and flora.

The removal of natural vegetation to accommodate construction of township settlement will reduce the habitat available for fauna species and may reduce animal populations and species compositions within the area. Evidence of existing erosion in the surrounding areas is evidence to this and shows the sensitivity of these soils to erosion.

The project area provides possible habitat and shelter to several and listed floral species. Although it is assumed that the majority of floral species has potential to occur in the nearby, hence many protected and endemic floral species have very specific habitat requirements, and the complete destruction will result in displacement to less optimal occurrence, or ultimately lead to their complete end. This will result in a decline in species numbers which may ultimately affect the conservation status of specific species on global, national and provincial scales.

The potential impacts associated with the various project stages are discussed below.

#### **5.5. Construction Phase**

The following potential impacts were considered on terrestrial vegetation communities:

- Further loss and fragmentation of the vegetation community (including portions of a vulnerable vegetation type). Possibility of extensive erosion - due to the sensitivity of soil layers to movement of vehicles and machines.

Potential impacts on faunal communities include:

- Displacement of faunal community (including threatened) due to habitat loss, disturbance or direct mortalities.

Potential impacts on wetland health include:

- Increased runoff and sedimentation.

## **5.6. Operational Phase**

The following potential impacts were considered on terrestrial vegetation communities:

- Continued encroachment and displacement of an indigenous and Vulnerable vegetation community by alien invasive plant species and on-going erosion; and
- Potential leaks, discharges, pollutant from development into the surrounding environment.

Potential impacts on faunal communities include:

- Continued displacement and fragmentation of the faunal community (including threatened or protected species) due to ongoing anthropogenic disturbances and habitat degradation (litter and road mortalities).

Potential impacts on wetland health include:

- Increased runoff and sedimentation.

## **5.8. Rehab and Closure**

The following potential impacts were considered on terrestrial vegetation communities:

- Encroachment and displacement of an indigenous and vulnerable vegetation community by alien invasive plant species and potential re-establishment of natural species that were removed. The nature of the erosion will depend on the amount of successful vegetation establishment.

Potential impacts on floral communities include:

- Degradation of the floral community (including threatened or protected species) due to construction of the houses, rehabilitation resulting in the floral species potentially re-establishing within the area.

## **6. MITIGATION**

### **6.1 Mitigation Measures for Impacts on Vegetation Communities.**

The mitigation measures proposed below should only come in to effect if environmental authorisation is approved for this project.

It is recommended that an extensive alien plant management plan be compiled to remove all alien vegetation from within the project area, should the project receive authorisation.

### **Recommended mitigation and rehabilitation measures include the following:**

- As far as possible, the proposed prospecting should be placed in areas that have already been disturbed, and no further loss of primary or secondary vegetation should be permitted (this is reasonable given the current, disturbed ecological condition). It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted.
- The duration of the prospecting should be minimized to as short term as possible, in order to reduce the period of disturbance on fauna and flora;
- Areas of indigenous vegetation, even secondary communities, should under no circumstances be fragmented or disturbed further or used as an area for dumping of waste;
- Due to the sensitivity of the soil layer, and the associated high risk of erosion, the access road should be constructed during the dry season.
- All necessary road mitigation measures must be put in place to slow (or stop) run-off from the proposed access road. This is a vital mitigation measure to prevent erosion;
- Dumping areas should completely avoid any trees, where possible (especially any protected tree species);
- An experienced road engineer must be consulted during the planning, construction and closure phases for the development of the access road;
- The Portion adjacent to the garden is sensitive (Figure 3.1) and should be declared a 'no-go' area during the construction and operational phases and all efforts must be made to prevent access to this area from construction workers, machinery, domestic animals and the general public;
- Where possible, existing access routes and walking paths must be made use of, and new routes limited;
- All laydown, storage areas etc should be restricted to within the project area;
- A qualified environmental control officer must be on site when construction begins to identify species that will be directly disturbed and to relocate fauna/flora that is found during construction (including all reptiles and amphibians);
- All livestock (including cattle, pigs, goats, domestic dogs and cats) must be kept out of the project area at all times;

- All staff and visitors to the site must undergo an extensive induction process and must be made aware of the sensitive nature of the environment and floral species which occur there;
- Rehabilitation of the trenches and access road must be made a priority (and be concurrent). Due to the sensitive nature of the soil layer and extreme risk of erosion, rehabilitation must include re-filling of the open trenches with appropriate rock and soils and suitably compacted. Top soils must also be utilised, and the area must be re-vegetated with plant and grass species which are endemic to this exact vegetation type; Rehabilitation measures that are implemented must be continually monitored for a minimum period of four years to ensure that proper succession has occurred and that there is no erosion occurring;
- 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; and
- Compilation of and implementation of an alien vegetation management plan for the entire site.

## **6.2 Mitigation Measures for Impacts on Faunal Communities**

Recommended mitigation and rehabilitation measures for faunal community's hinge largely on protecting their habitats and ensuring it remains together.

The following measures are recommended:

- If any faunal species are recorded during construction, activities should temporarily cease, and an appropriate specialist should be consulted to identify the correct course of action;
- The duration of the construction should be minimized to as short term as possible, in order to reduce the period of disturbance on fauna and flora;
- Prior and during vegetation clearance any larger fauna species noted should be given the opportunity to move away from the construction machinery;
- Fauna species such as frogs and reptiles that have not moved away should be carefully and safely removed to a suitable location beyond the extent of the development footprint by a suitably qualified ECO trained in the handling and relocation of animals;

- Fencing should be erected around the project area to prevent workers and members of the public from entering the development site. This fence should have small openings to allow wildlife to pass through;
- Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site;
- No trapping, killing or poisoning of any wildlife is to be allowed on site, including snakes, birds, lizards, frogs, insects or mammals;
- During the construction phase noise must be kept to an absolute minimum to reduce the impact of the development on the nearby residence.
- Furthermore, during the operational phase, noise must be kept to an absolute minimum during the evenings and at night to minimise all possible disturbances to amphibian species and nocturnal mammals;
- 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; Contractors and employees must all undergo the induction and made aware of the sensitive areas to be avoided;
  - o The induction must include a focus on amphibian, bird and reptile species that may occur within the project area; and
- Construction activities and vehicles could cause spillages of lubricants, fuels and construction material which could then be transported to river, impacting on the water quality and potentially the functioning of the systems. All vehicles and equipment must be maintained, and all refuelling and servicing of equipment is to take place in demarcated areas outside of the project area.

### **6.3 Mitigation Measures for Impacts on Wetland Systems**

The following mitigation measures apply to the wetland ecosystems:

- The recommended buffer zones should be strictly adhered to. Buffer areas must be visibly demarcated and managed as No-Go areas;
- Construction areas should be demarcated, and wetland areas marked as –restricted in order to prevent the unnecessary impact to and loss of these systems;
- Careful separation of soil types / strata as identified;
- No vegetation should be cleared prior to stripping of topsoil, and vegetation must be stripped with the topsoil to retain a seed bank;



- Topsoil must be stripped to a depth of at least 300mm and managed for rehabilitation of impacted areas;

#### **6.4 Mitigation Measures**

The following general mitigation measures must apply:

- Following the removal of these materials, the compacted areas can be ripped to an appropriate depth (at least 300 mm) to remove any minor compaction.
- During the construction phase vehicles and machinery must make use of existing access routes, before adjacent areas are considered for access;
- Laydown yards, camps and storage areas must be beyond the buffer areas;
- The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are cleaned up and discarded correctly;
- It is preferable that construction takes place during the dry season to reduce the erosion potential of the exposed surfaces;
- All chemicals and toxicants to be used for the construction must be stored outside the wetland system and in a bounded area;
- All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced off-site;
- All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good –housekeeping;
- Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel throughout the project area. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation);
- Have action plans on site, and training for contractors and employees in the event of spills, leaks and other impacts to the aquatic systems;
- All removed soil and material must not be stockpiled within the system. Stockpiling should take place outside of the watercourse. All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds;

- Any exposed earth should be rehabilitated promptly by planting suitable vegetation (Vigorous indigenous grasses) to protect the exposed soil;
- No dumping of construction material on-site may take place;
- All machinery and equipment must be inspected regularly for faults and possible leaks, these should be serviced off-site; and
- All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported.

## **7. DISCUSSION**

There is no major anticipated impact on terrestrial biodiversity which include fragmentation of habitat and natural vegetation alike. The loss and degradation of habitat has already occurred in the general area and on site due to current use of the land. Therefore, the loss of vegetation and fragmentation of habitat will continue in this area with little control being implemented by the proponent. The Environmental Screening Report shows that there are no sensitive features present or will be affected. As the development footprint has a relatively small size the consequent impact on the natural environment will be limited to the site footprint and it is unlikely that it will have negative consequences on the Ecological Support Area.

## **8. CONCLUSION AND RECOMMENDATIONS.**

The proposed activity is of relatively small nature and the anticipated impact on the natural environment will be limited to the site. This investigation concludes that no sensitive or threatened biota will be negatively affected by the proposed activities. Recommendations and mitigation measures are provided

Possible impacts and the associated recommendations for monitoring are listed in Table 5. In general, during the construction phase, monitoring should be used to ensure that the development takes place within the guidelines provided by this document and to ensure that construction does not impact adjacent natural vegetation, fauna and ecosystems. During the operational phase, monitoring should be focused on ensuring that there are no residual impacts such as soil erosion and alien plant invasion resulting from the construction phase. Recommendations and mitigation measures are provided regarding monitoring

**Table 5: Assessment of Impact on Natural And Habitats, Including Proposed Mitigation Measures.**

<b>Nature of impacts</b>	<b>Intensity</b>	<b>Significance before mitigation</b>	<b>Nature of impact and Mitigation measures</b>
Loss of vegetation	Low	Low	Minimize loss and disturbance of natural habitat by using already disturbed areas (Cleared lands). Make use of existing access roads. Align access roads with existing linear infrastructure (e.g. roads, power lines) Make every effort to save protected trees.
Invasive vegetation	Low	Medium	Implement weed control program. Use only indigenous flora for landscaping.
Negative impacts on terrestrial fauna	Low	Medium	This impact has medium significance as most of the fauna has been lost on site. Reptiles and/or subterranean vertebrates that are unearthed during construction must be allowed to escape to the surrounds or must be relocated by a specialist. No-one is allowed to kill snakes or any other wild animals. Excavations must be inspected daily in order to rescue trapped animals.
Negative impacts on Ecological Support Area	Medium	Medium	As the development footprint has a relatively small size the consequent impact on the natural environment will be limited to the site footprint and it is unlikely that it will have negative consequences on the <i>Ecological Support Area</i> . The construction personnel and future residents must be educated to respect and realise the importance of biodiversity and a clean environment. The applicant must ensure that services with regards to waste management and sewage treatment are effective and are maintained.

Regarding monitoring the following preventative and mitigating measures are incorporated with the construction and operational phases of the housing and that they are implemented.

## Construction Phase

- The proponent must be committed to a conservation approach of practice and the actual footprint of disturbance must be kept to a minimum.
- As much of the natural environment must be conserved, there should be minimal vegetation clearing.
- Relocation of important species, identification and demarcation of specimens and sub habitats not to be disturbed will have to be done beforehand by a specialist.
- Important species (fauna as well as flora) that will be threatened by the development must be relocated to safer habitats by suitable specialists.
- Preventative erosion control measures to be put in place;

## Operational Phase

- Maintenance team must be educated with regards of the importance of biodiversity so that we can prioritise conservation of vegetation and create as least disturbance as possible.
- The operational phase must be monitored by the environmental officer appointed by the proponent to ensure that enough mitigation measures are in place and to take reactive measures in places where impacts pose problematic.

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## **APPENDIX A: MAMMALS THAT ARE LIKELY TO INHABIT THE AREA**

Common name	Scientific name
<i>Bos Taurus</i>	Cow
<i>Pronolagus crassicaudatus</i>	Rabbit
<i>Equus caballus</i>	Horse
<i>Capra aegagrus hircus</i>	Goat
<i>Potamochoerus larvatus</i>	Bushpig
<i>Procavia capensis</i>	Dassie/ rock badger
<i>Chlorocebus pygerythrus</i>	Vervet monkey
<i>Phacochoerus africanus</i>	Warthog
<i>Ourebia ourebi</i>	Oribi
<i>Stigmochelys pardalis</i>	Leopard tortoise
<i>Canis mesomelas</i>	Jackals
<i>Leptailurus serval</i>	Serval
<i>Felis silvestris lybica</i>	African wildcat
<i>Orycteropus afer</i>	Aardvark
<i>Tragelaphus scriptus</i>	Bushbuck
<i>Philantomba monticola</i>	Blue duiker
<i>Sylvicapra grimmia</i>	Common duiker
<i>Redunca fulvorufula</i>	Mountain reedbuck
<i>Redunca arundinum</i>	Common reedbuck

<i>Raphicerus campestris</i>	Steenbok
<i>Pelea capreolus</i>	Grey reedbuck

**APPENDIX B: LIST OF BIRDS LIKELY TO INHABIT THE AFFECTED AREA.**

Common group	Common species	Genus	Species
Apalis	Bar-throated	<i>Apalis</i>	<i>thoracica</i>
Barbet	Black-collared	<i>Lybius</i>	<i>torquatus</i>
Barbet	Crested	<i>Trachyphonus</i>	<i>vaillantii</i>
Bishop	Southern Red	<i>Euplectes</i>	<i>orix</i>
Bokmakierie	Bokmakierie	<i>Telophorus</i>	<i>zeylonus</i>
Boubou	Southern	<i>Laniarius</i>	<i>ferrugineus</i>
Bulbul	Dark-capped	<i>Pycnonotus</i>	<i>tricolor</i>
Bunting	Golden-breasted	<i>Emberiza</i>	<i>flaviventris</i>
Bush-shrike	Olive	<i>Telophorus</i>	<i>olivaceus</i>
Bustard	Denham's	<i>Neotis</i>	<i>denhami</i>
Buzzard	Jackal	<i>Buteo</i>	<i>rufofuscus</i>
Buzzard	Steppe	<i>Buteo</i>	<i>vulpinus</i>
Canary	Cape	<i>Serinus</i>	<i>canicollis</i>
Canary	Yellow-fronted	<i>Crithagra</i>	<i>mozambicus</i>
Chat	Buff-streaked	<i>Oenanthe</i>	<i>bifasciata</i>
Cisticola	Croaking	<i>Cisticola</i>	<i>natalensis</i>
Cisticola	Levaillant's	<i>Cisticola</i>	<i>tinniens</i>



Cisticola	Pale-crowned	<i>Cisticola</i>	<i>cinnamomeus</i>
Cisticola	Wailing	<i>Cisticola</i>	<i>lais</i>
Cisticola	Wing-snapping	<i>Cisticola</i>	<i>ayresii</i>
Cisticola	Zitting	<i>Cisticola</i>	<i>juncidis</i>
Crow	Pied	<i>Corvus</i>	<i>albus</i>
Cuckoo	Black	<i>Cuculus</i>	<i>clamosus</i>
Cuckoo	Diderick	<i>Chrysococcyx</i>	<i>caprius</i>
Cuckoo	Red-chested	<i>Cuculus</i>	<i>solitarius</i>
Dove	Laughing	<i>Streptopelia</i>	<i>senegalensis</i>
Dove	Red-eyed	<i>Streptopelia</i>	<i>semitorquata</i>
Drongo	Fork-tailed	<i>Dicrurus</i>	<i>adsimilis</i>
Duck	African Black	<i>Anas</i>	<i>sparsa</i>
Duck	Yellow-billed	<i>Anas</i>	<i>undulata</i>
Eagle-owl	Spotted	<i>Bubo</i>	<i>africanus</i>
Egret	Cattle	<i>Bubulcus</i>	<i>ibis</i>
Falcon	Amur	<i>Falco</i>	<i>amurensis</i>
Firefinch	African	<i>Lagonosticta</i>	<i>rubricata</i>
Fiscal	Common (Southern)	<i>Lanius</i>	<i>collaris</i>

Flycatcher	Southern Black	<i>Melaenornis</i>	<i>pammelaina</i>
Flycatcher	Spotted	<i>Muscicapa</i>	<i>striata</i>
Francolin	Shelley's	<i>Scleroptila</i>	<i>shelleyi</i>
Goose	Egyptian	<i>Alopochen</i>	<i>aegyptiacus</i>
Goose	Spur-winged	<i>Plectropterus</i>	<i>gambensis</i>
Goshawk	African	<i>Accipiter</i>	<i>tachiro</i>
Grassbird	Cape	<i>Sphenoeacus</i>	<i>afer</i>
Guineafowl	Helmeted	<i>Numida</i>	<i>meleagris</i>
Hamerkop	Hamerkop	<i>Scopus</i>	<i>umbretta</i>
Heron	Black-headed	<i>Ardea</i>	<i>melanocephala</i>
Ibis	African Sacred	<i>Threskiornis</i>	<i>aethiopicus</i>
Ibis	Hadedda	<i>Bostrychia</i>	<i>hagedash</i>
Ibis	Southern Bald	<i>Geronticus</i>	<i>calvus</i>
Indigobird	Dusky	<i>Vidua</i>	<i>funerea</i>
Kite	Black-shouldered	<i>Elanus</i>	<i>caeruleus</i>
Lapwing	Blacksmith	<i>Vanellus</i>	<i>armatus</i>
Lark	Red-capped	<i>Calandrella</i>	<i>cinerea</i>
Lark	Rufous-naped	<i>Mirafr</i>	<i>africana</i>

Longclaw	Cape	<i>Macronyx</i>	<i>capensis</i>
Mannikin	Bronze	<i>Spermestes</i>	<i>cucullatus</i>
Martin	Banded	<i>Riparia</i>	<i>cincta</i>
Martin	Brown-throated	<i>Riparia</i>	<i>paludicola</i>
Martin	Rock	<i>Hirundo</i>	<i>fuligula</i>
Masked-weaver	Southern	<i>Ploceus</i>	<i>velatus</i>
Mousebird	Speckled	<i>Colius</i>	<i>striatus</i>
Neddicky	Neddicky	<i>Cisticola</i>	<i>fulvicapilla</i>
Oriole	Black-headed	<i>Oriolus</i>	<i>larvatus</i>
Paradise-flycatcher	African	<i>Terpsiphone</i>	<i>viridis</i>
Petronia	Yellow-throated	<i>Petronia</i>	<i>superciliaris</i>
Pigeon	Speckled	<i>Columba</i>	<i>guinea</i>
Pipit	African	<i>Anthus</i>	<i>cinnamomeus</i>
Pipit	Long-billed (Split, see Nicholson's 10877 and Long-billed 10876)	<i>Anthus</i>	<i>similis</i>
Prinia	Drakensberg	<i>Prinia</i>	<i>hypoxantha</i>
Prinia	Tawny-flanked	<i>Prinia</i>	<i>subflava</i>
Puffback	Black-backed	<i>Dryoscopus</i>	<i>cubla</i>

Quail	Common	<i>Coturnix</i>	<i>coturnix</i>
Quailfinch	African	<i>Ortygospiza</i>	<i>atricollis</i>
Reed-warbler	African	<i>Acrocephalus</i>	<i>baeticatus</i>
Robin-chat	Cape	<i>Cossypha</i>	<i>cafra</i>
Scrub-robin	White-browed	<i>Cercotrichas</i>	<i>leucophrys</i>
Secretarybird	Secretarybird	<i>Sagittarius</i>	<i>serpentarius</i>
Seedeater	Streaky-headed	<i>Crithagra</i>	<i>gularis</i>
Sparrow	House	<i>Passer</i>	<i>domesticus</i>
Sparrow	Southern headed	Grey- <i>Passer</i>	<i>diffusus</i>
Spurfowl	Swainson's	<i>Pternistis</i>	<i>swainsonii</i>
Starling	Red-winged	<i>Onychognathus</i>	<i>morio</i>
Stonechat	African	<i>Saxicola</i>	<i>torquatus</i>
Stork	White	<i>Ciconia</i>	<i>ciconia</i>
Sunbird	Amethyst	<i>Chalcomitra</i>	<i>amethystina</i>
Sunbird	Greater collared	Double- <i>Cinnyris</i>	<i>afer</i>
Sunbird	Malachite	<i>Nectarinia</i>	<i>famosa</i>
Sunbird	White-bellied	<i>Cinnyris</i>	<i>talatala</i>

Swallow	Barn	<i>Hirundo</i>	<i>rustica</i>
Swallow	Greater Striped	<i>Hirundo</i>	<i>cucullata</i>
Swallow	Lesser Striped	<i>Hirundo</i>	<i>abyssinica</i>
Swallow	White-throated	<i>Hirundo</i>	<i>albigularis</i>
Swift	Alpine	<i>Tachymarptis</i>	<i>melba</i>
Swift	Little	<i>Apus</i>	<i>affinis</i>
Swift	White-rumped	<i>Apus</i>	<i>caffer</i>
Tchagra	Black-crowned	<i>Tchagra</i>	<i>senegalus</i>
Teal	Red-billed	<i>Anas</i>	<i>erythrorhyncha</i>
Thrush	Kurrichane	<i>Turdus</i>	<i>libonyanus</i>
Tit	Southern Black	<i>Parus</i>	<i>niger</i>
Turtle-dove	Cape	<i>Streptopelia</i>	<i>capicola</i>
Wagtail	Cape	<i>Motacilla</i>	<i>capensis</i>
Warbler	Dark-capped Yellow	<i>Chloropeta</i>	<i>natalensis</i>
Waxbill	Common	<i>Estrilda</i>	<i>astrild</i>
Waxbill	Orange-breasted	<i>Amandava</i>	<i>subflava</i>
Weaver	Cape	<i>Ploceus</i>	<i>capensis</i>
Weaver	Village	<i>Ploceus</i>	<i>cucullatus</i>

White-eye	Cape	<i>Zosterops</i>	<i>virens</i>
Whydah	Pin-tailed	<i>Vidua</i>	<i>macroura</i>
Widowbird	Fan-tailed	<i>Euplectes</i>	<i>axillaris</i>
Widowbird	Red-collared	<i>Euplectes</i>	<i>ardens</i>

**Appendix C: Amphibian species LIKELY TO occur within the affected Area.**

Scientific name	Common name
<i>Afrana angolensis</i>	Common or Angola River Frog
<i>Amietophrynus garmani</i>	Olive toad
<i>Amietophrynus gutturalis</i>	Guttural Toad
<i>Amietophrynus poweri</i>	Power's Toad
<i>Cacosternum boettgeri</i>	Common Caco
<i>Chiromantis xerampelina</i>	Southern Foam Nest Frog
<i>Kassina senegalensis</i>	Bubbling Kassina
<i>Phrynobatrachus natalensis</i>	Snoring Puddle Frog
<i>Phrynomantis bifasciatus</i>	Banded Rubber Frog
<i>Poyntonophrynus fenoulheti</i>	Northern Pygmy Toad
<i>Ptychadena anchietae</i>	Plain Grass Frog
<i>Ptychadena mossambica</i>	Broadbanded Grass Frog
<i>Pyxicephalus adspersus</i>	Giant Bull Frog
<i>Pyxicephalus edulis</i>	African Bull Frog
<i>Schismaderma carens</i>	Red toad
<i>Schismaderma carens</i>	Red toad
<i>Tomopterna cryptotis</i>	Tremelo Sand Frog
<i>Tomopterna natalensis</i>	Natal Sand Frog
<i>Xenopus laevis</i>	Common Platanna