ECOLOGICAL SURVEY, SEARCH AND RESCUE OF PLANT SPECIES AND AVIFUANA ASSESSMENT FOR THE CONSTRUCTION OF THE 60 YEAR ASH DISPOSAL FACILITY AT KUSILE POWER STATION, OGIES, MPUMALANGA

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JANUARY 2023

Conducted on behalf of:

Eskom

Compiled by:

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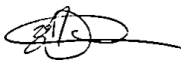

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STRICTLY CONFIDENTIAL

Declaration of Independence by Specialist

I, **Ndumiso Dlamini**, in my capacity as a specialist consultant, hereby declare that I -

- act as an independent consultant;
- 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;
- declare that there are no circumstances that may compromise my objectivity in performing such work;
- do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998);
- have no, and will not engage in, conflicting interests in the undertaking of the activity;
- undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998);
- have expertise in conducting the specialist report relevant to this application, including knowledge of the National Environmental Management Act, 1998 (Act No. 107 of 1998), regulations and any guidelines that have relevance to the proposed activity;
- based on information provided to me by the project proponent and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional ability;
- undertake to have my work peer reviewed on a regular basis by a competent specialist in the field of study for which I am registered; and
- as a registered member of the South African Council for Natural Scientific Professions, will undertake my profession in accordance with the Code of Conduct of the Council, as well as any other societies to which I am a member.

Signature
Date Signed: **12-10-2022**

Name and Surname of Specialist: **Ndumiso Dlamini** (Pr. Sci.Nat)

Designation: **Ecologist**

Company Name: Umongo Environmental Services
SACNASP Reg. No. **116579**

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1 INTRODUCTION

1.1 Background and Project Description

Kimopax (Pty) Ltd (Umongo) was commissioned to conduct an Ecological Assessment (inclusive of flora and avifauna) as part of the authorised project for construction and operation of Kusile Power Station 60 years Ash disposal facility. This ecological assessment forms part of the search and rescue of plants species prior to the commencement of the construction activity. The Eskom Kusile Power station 60 years ADF Facility, hereafter referred to as the "project area". The project area is located approximately 26km west of eMalahleni and on the border of Gauteng-Mpumalanga. The project area is located within Victor Khanye local municipality and greater Nkangala district municipality.

The project area is situated within the B20G Quaternary Catchment within the Olifants Management Area. The climate varies greatly from the cool Highveld in the south to subtropical, east of the escarpment. The region has a mean annual precipitation rate of 500 to 800 mm. Diverse economic activity includes mining, metallurgic industries, irrigation, dryland and subsistence agriculture, and ecotourism. The provision of water to meet ecological requirements in the Olifants River is one of the controlling factors in the management of water resources throughout the WMA. Several large dams' control much of the flow in these rivers. The Olifants WMA receives substantial amounts of water from transfers to serves as cooling water for power generation, while smaller transfers are made to neighbouring WMAs (StatsSA, 2010). The land uses within the local area is predominantly low density, semi-rural residential areas, Power Station, agriculture and transformed grasslands. Mining activities are well established in the region and local areas.

1.2 Scope of the specialist study

The overarching objective of this study is to compile a Terrestrial Ecological Assessments Report that includes a description of the current condition of the terrestrial ecology (flora and avifauna) and wetlands within the project area. The report also provides for the identification of impacts on the above habitats that are anticipated from project-related activities and recommend appropriate mitigation measures as applicable.

Specific intended outcomes of the study are outlined below:

Terrestrial Ecological Assessment:

- Determine the ecological diversity in terms of plants, animals, birds and reptiles.
- Identify and consider all sensitive ecological habitats or features.
- Determine the ecological condition and sensitivity of identified habitats.
- Assess conservation status of plant and animal species.
- Inspection conducted by Avifauna Specialist within the proposed ADF footprint and adjacent to the footprint prior to construction to identify, removal and relocation of plant species.
- Compile a species inventory.

Impact Assessment and Mitigation:

- Identify and undertake a risk assessment of anticipated project-related impacts.
- Recommend feasible mitigation measures for implementation, including but not limited to the recommendation of minimum buffers.

1.3 Relevant Legislations and Guidelines

The following legislative requirements and relevant guidelines (at both national and local level) were considered during the assessment:

1.3.1 National Environmental Management Act (Act 107 of 1998)

The National Environmental Management Act (NEMA) (Act 107 of 1998) and the associated Regulations (No R. 324, No R. 325 and No R. 326) as amended (April 2017), states that prior to any development taking place within a wetland or riparian area, an environmental authorisation process needs to be followed. This could follow either the Basic Assessment Report (BAR) process or the Environmental Impact Assessment (EIA) process depending on the type and location of the proposed activity.

1.3.2 National Environmental Management: Biodiversity Act (Act 10 of 2004)

The National Environmental Management: Biodiversity Act (10 of 2004), (NEMBA) provides for the consolidation of biodiversity legislation through establishing national norms and standards for the management of biodiversity across all sectors and by different management authorities. Certain activities, known as Restricted Activities, are regulated on listed species using permits by a special set of regulations published under the Act. Restricted activities regulated under the act are keeping, moving, having in possession, importing and exporting, and selling of listed species.

1.3.3 The National Forest Act (84 of 1998)

The National Forest Act (84 of 1998) aims to meet the following objectives:

a) Promote the sustainable management and development of forests for the benefit of all.
b) Create the conditions necessary to restructure forestry in South Africa.
c) Provide special measures for the protection of certain forests and protected trees.
d) Promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes.
e) Promote community forestry.
f) Promote greater participation in all aspects of forestry and the forest products industry by persons disadvantaged by unfair discrimination.

1.3.4 Conservation of Agricultural Resources Act (Act 43 of 1983)

This act regulates the utilisation and protection of wetlands, soil conservation and all matters relating thereto; control and prevention of veld fires, control of weeds and invader plants, the prevention of water pollution resulting from farming practices and losses in biodiversity.

1.3.5 White Paper on Conservation and Sustainable Use of South Africa's Biological Diversity (1997)

The policy comprises part of the broader context wherein national environmental policy has been formulated. It further sets the agenda for defining the strategy for conservation of South Africa's biodiversity.

1.3.6 The National Water Act (Act 36 of 1998)

The National Water Act (NWA) recognises that the protection of water resources, including not only the water itself but the entire aquatic ecosystem, is necessary to achieve sustainable use of water for the benefit of all water users. In section 1 of the NWA a water resource is defined as being all water found in the various phases of the hydrological cycle, including that portion of water that is found underground. This definition ensures that the entire water resource is treated in an integrated fashion and as a resource that is common to all. The DWS has regulated that no activity may take place within a watercourse without authorisation from DWS. Therefore, no development activities may occur within any wetland or riparian zone unless authorisation is granted by DWS in terms of section 21 of the NWA.

1.4 Limitations and knowledge gaps

The following limitations and knowledge gaps were applicable to this assessment:

a) Some plants species flower during specific seasons and are difficult to identify without inflorescence, therefore inconspicuous plant species may have been missed.
b) The GPS used for collecting co-ordinates was accurate to within five meters. Therefore, points captured maybe offset by at least five meters to either side.
c) The assessment was based on a single early wet season survey only which was conducted in September 2022, and information provided should be interpreted accordingly. It must be noted that in-field conditions represented dry season conditions and much of the vegetation was not in flower, therefore species identification was limited.
d) Ecology is dynamic and complex, certain aspect may have been overlooked. However, it is expected that the proposed development has been accurately assessed and considered, based on consideration of existing studies and monitoring data.
e) Conclusions of this report were based on experience of these and similar species in different parts of South Africa. Faunal behaviour cannot be entirely reduced to formulas that will hold true under all circumstances.
f) Furthermore, many faunal species of conservation importance (Red Data Species) are secretive and difficult to observe even during intensive field surveys.
g) It is important to note that, although the predicted impacts are mostly concerned with Red Data species, the non-Red Data species will also benefit from the proposed mitigation measures as they share the same habitat and face the same potential impacts.

2 PROJECT AREA DESCRIPTION

The proposed Kusile Power Station 60-year Ash Disposal Facility (ADF) project entails the construction and operation of an ADF, which will be in addition to the authorised current operational 10 Year Co-disposal Ash and Gypsum facility at the Kusile Power Station. The project is primarily constructing a suitable facility for the disposal of ash generated by Kusile Power Station. The project has been authorised in terms of the National Environmental Management Waste Act (NEMWA) (59 of 2008), National Environmental Management Act (NEMA) (107 of 1998) and National Water Act (NWA) (36 of 1998). The proposed Kusile ADF size is approximately 748ha with approximately 227.67 ha of wetland occurring within the footprint of the site, making up 27.5 % of the surface area. These wetlands make up the headwaters of the Klipfonteinspruit. The 60 Y ADF construction activities include the following:

a) A dry ash disposal facility;
b) A conveyor belt system for the transportation of ash from the power station to the ash disposal site/facility;
c) A single waste stream comprised of combined bottom ash and fly-ash;
d) Services including electricity and water supply in the form of overhead power line and pipelines respectively;
e) The construction of new storm water management and infrastructure, and drainage system; and Linear infrastructure such as roads to and from the site, culverts and channels;
f) Stream Diversion;

While an effort was made to visit every area including the wetlands within the 60 Year ADF, not every portion of the facility was walked due to extensive cultivation on the proposed land which presented obstacles to accurately delineate the wetland boundaries on site, hence the requirement for further assessment and delineation. According to the Terrestrial Ecosystems Assessment survey report, no Red Data plant species were observed within the wetlands on site, though a number of protected species do occur within the region such as:

a) Crinum bulbispermum,
b) Crinum graminicola,
c) Erythrina zeyheri,
d) Gladiolus crassifolius,
e) Gladiolus eliottii,

f) Hypoxis hemerocallidea

All of these species are protected in terms of the Mpumalanga Nature Conservation Act (Act 10 of 1998). According to SANBI SIBIS database and data received from the Mpumalanga Tourism and Parks Agency, twenty-five Red Data and/or protected plant species have historically been recorded in the general vicinity in which the study area is located. These are primarily from the families MESEMBRYANTHEMACEAE (5 species), IRIDACEAE (4 species), ORCHIDACEAE (4 species). All have a high probability of occurring in the study area. Plant species of conservation importance recorded in the study area include Boophane disticha, Crinum bulbispermum, Hypoxis sp. and Gladiolus sp.

Below is a list of Red Data and/or protected plant species (Family and scientific names) potentially occurring within the boundaries of the project area:

a) AMARYLLIDACEAE : Boophone disticha
b) AMARYLLIDACEAE : Crinum bulbispermum
c) AMARYLLIDACEAE : Cyrtanthus breviflorus
d) MESEMBRYANTHEMACEAE : Delosperma gautengense
e) MESEMBRYANTHEMACEAE : Delosperma macellum
f) ZAMIACEAE : Encephalartos lanatus
g) ZAMIACEAE : Encephalartos middelburgensis
h) HYACINTHACEAE : Eucomis autumnalis
i) ORCHIDACEAE : Eulophia coddii Vulnerable
j) MESEMBRYANTHEMACEAE : Frithia humilis
k) MESEMBRYANTHEMACEAE : Frithia pulchra
l) IRIDACEAE : Gladiolus crassifolius
m) IRIDACEAE : Gladiolus elliotii
n) IRIDACEAE : Gladiolus papilio
o) EUPHORBIACEAE : Euphorbia clavarioides
p) ORCHIDACEAE : Habenaria clavata
q) ORCHIDACEAE : Habenaria mossii
r) ORCHIDACEAE : Habenaria schlechteri (formerly Centrostigma schlechteri)
s) HYPOXIDACEAE : Hypoxis hemerocallidea
t) AQUIFOLIACEAE : Ilex mitis
u) ISOETACEAE : Isoetes transvaalensis

v) MESEMBRYANTHEMACEAE : Khadia beswickii
w) LILIACEAE : Kniphofia ensifolia
x) FABACEAE : Melolobium subspicatum
y) PROTEACEAE : Protea welwitschii
z) IRIDACEAE: Watsonia bella

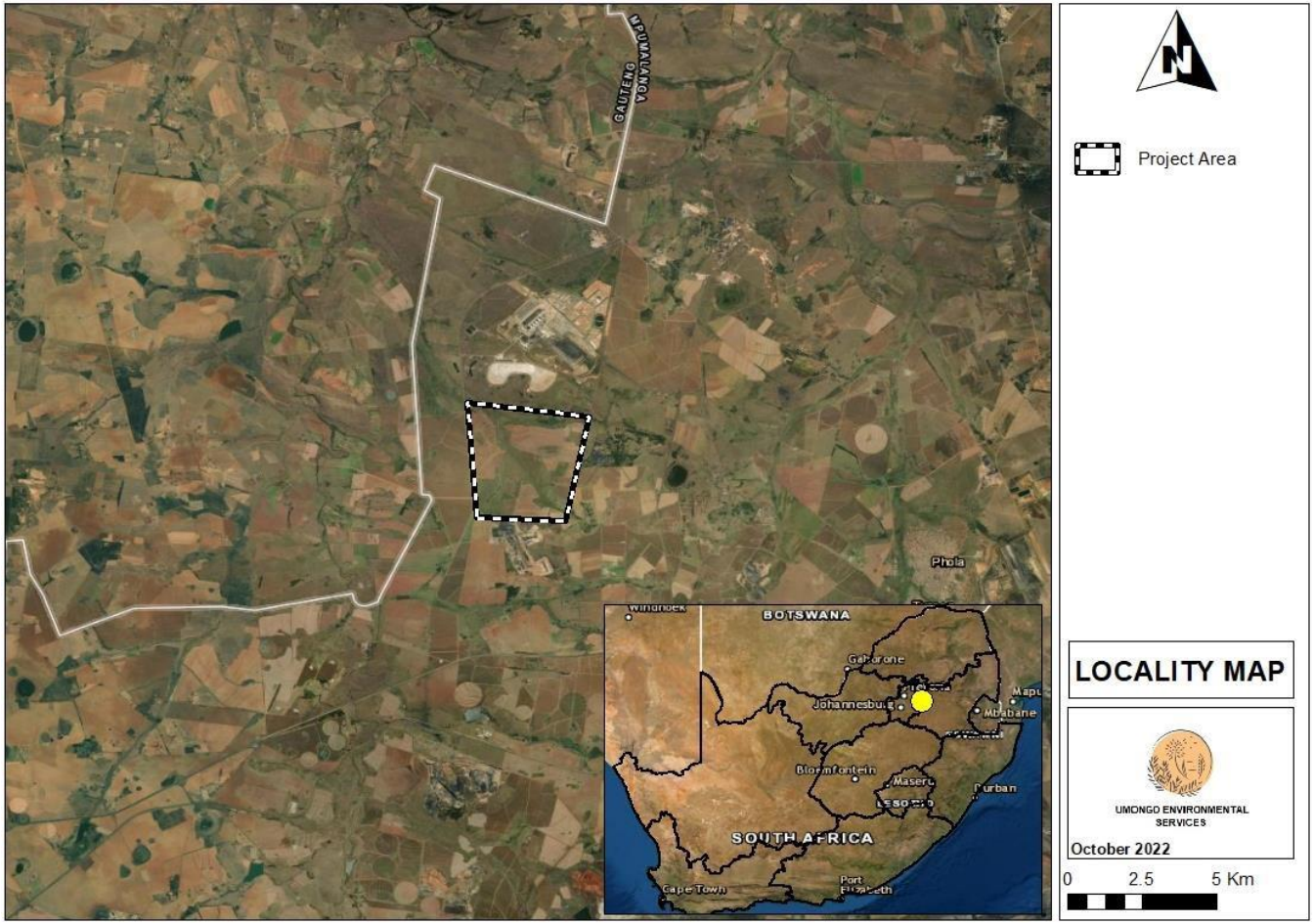

Figure 1: Location of the project area in relation to the surrounding areas.

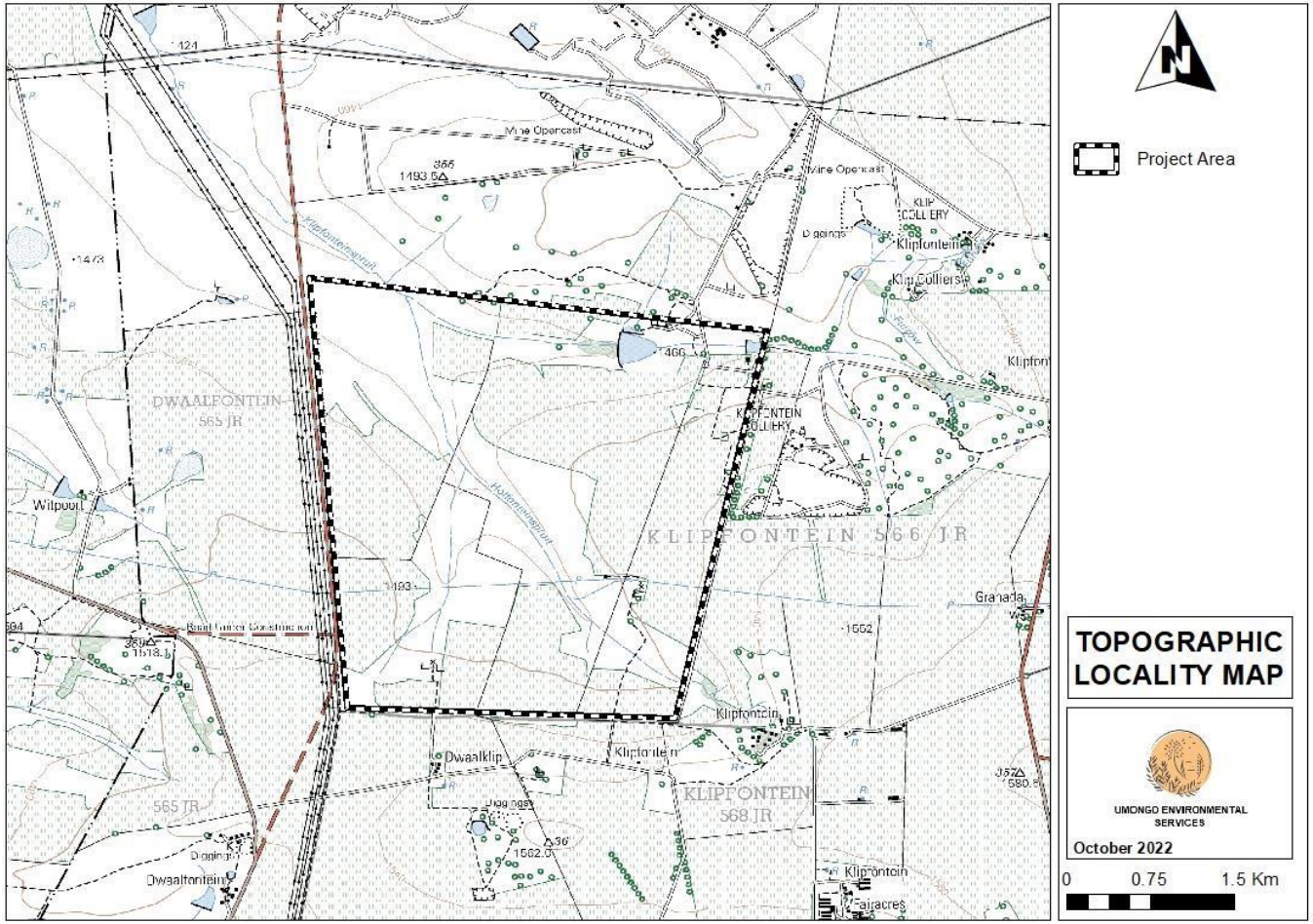

Figure 2: Project area depicted on a 1:50 000 topographical map.

3 METHODOLOGY

3.1 Flora

The flora assessment consisted of two complementary approaches:

a) The assessment commenced with a desktop study during which data related to the study area was collected and studied using existing literature, maps and aerial photography and Geographical Information Systems (GIS). During the desktop exercise, floral species and vegetation types of conservation significance with a potential to be affected by the proposed project were identified before field verification. A broad-level desktop analysis was carried out using the following available information:

- Latest and historic Imagery (Google EarthTM).
- Aerial photography shapefiles.
- South African Vegetation Map (Mucina and Rutherford, 2006).
- 5m Elevation Contours (Surveyor General).
- Pretoria Computerised Information System (PRECIS).
- South African National Biodiversity Institute (SANBI) Threatened Species Programme (TSP).

Infield data was collected both on 08 September 2022 during a site survey. Walk through surveys were carried out where different habitat units were identified prior to analysis of the composition of floral species. A species inventory list was compiled for each habitat unit. The species list was compared to the expected "benchmark" vegetation to provide an indicator of the ecological integrity and conservation value of each habitat unit.

3.2 Avifauna

Desktop analysis to determine birds associated with the habitat systems was carried out using the following:

Southern African Bird Atlas Project from the University of Cape Town.
The Eskom Red Data book of birds of South Africa, Lesotho and Swaziland (Barnes, 2000).

A 10x42 Bushnell Waterproof Binocular was used to visually observe bird species. Bird calls and feathers were also used to identify species associated with the project area. Where required, Sasol Birds of Southern Africa (Sinclair et al. 2002) was used to verify certain bird species.

3.3 Impact Assessment and Recommendations

Following the completion of the terrestrial ecological assessment, an impact assessment was conducted, and recommendations were developed to address and mitigate impacts associated with the proposed housing development and related activities. These recommendations also include general 'best practice' management measures, which apply to the development and related activities as a whole, and which are presented in the report. Mitigation measures have been developed to address issues in all phases throughout the life of the operation including planning, construction and operation. The detailed site-specific mitigation measures are outlined in Section 6 of this report.

4 BACKGROUND INFORMATION OF THE PROJECT AREA

4.1 Climate

The project area falls within a strongly annual summer rainfall, with very dry winters. MAP 650–900 mm (overall average: 726 mm), MAP relatively uniform across most of this unit, but increases significantly in the extreme southeast. The coefficient of variation in MAP is 25% across most of the unit but drops to 21% in the east and southeast. Incidence of frost from 13–42 days, but higher at higher elevations.

4.2 Regional Vegetation

The National South African Vegetation Map (Mucina & Rutherford, 2018) categorises the region as situated within the Eastern Highveld and Rand Highveld Grassland vegetation units as presented in Figure 3 and 4 below (Mucina & Rutherford, 2018).

The Eastern Highveld vegetation unit is found throughout the Mpumalanga and Gauteng provinces. The landscape is dominated by moderately undulating plains at altitudes that range between 1520m – 1780m.

The Rand Highveld Grassland vegetation unit is found mainly throughout the Gauteng, Northwest, Free state and Mpumalanga provinces. The vegetation unit occurs in altitudes of

1300m-1635m, and the topography is highly variable with sloping plains and ridges. The vegetation has high species diversity due to alternating topography.

This vegetation type occurs on moderately undulating planes, including some low hills and pan depressions. The vegetation is a short dense grass land dominated by the usual Highveld grass composition (Arsitida, Digitaria, Erafrostsis, Themeda, Tristachya etc.) with small scattered rocky outcrops with, wiry sour grasses and some woody species. Some 44% transformed primarily by cultivation, plantations, mines, urbanisation and by building of dams. No serious alien invasions are reported (Mucina & Rutherford, 2006).

Table 1:Vegetation Status.

Vegetation Name	Ecological Status	Conservation Status	% of Project Area
Eastern Highveld Grassland	Largely Modified	Endangered	75%
Rand Highveld Grassland	Largely Modified	Endangered	25%

Table 2:Vegetation Status.

Vegetation Unit	Dominant Plant Species
Eastern Highveld Grassland	*Andropogon shirensis, Cynodon dactylon, Eragrostis curvula, Eragrostis plan, Harpachloa falx Aristida congesta Sporobulus africana, Panicum natalense, Themeda triandra*
Rand Highveld Grassland	*Cynodon dactylon, Eragrostis chloromelas, Panicum natalense, Aristida congesta, Eragrostis capensis, Eragrostis curvula*

Figure 3: Project area depicted on a 1:50 000 topographical map.

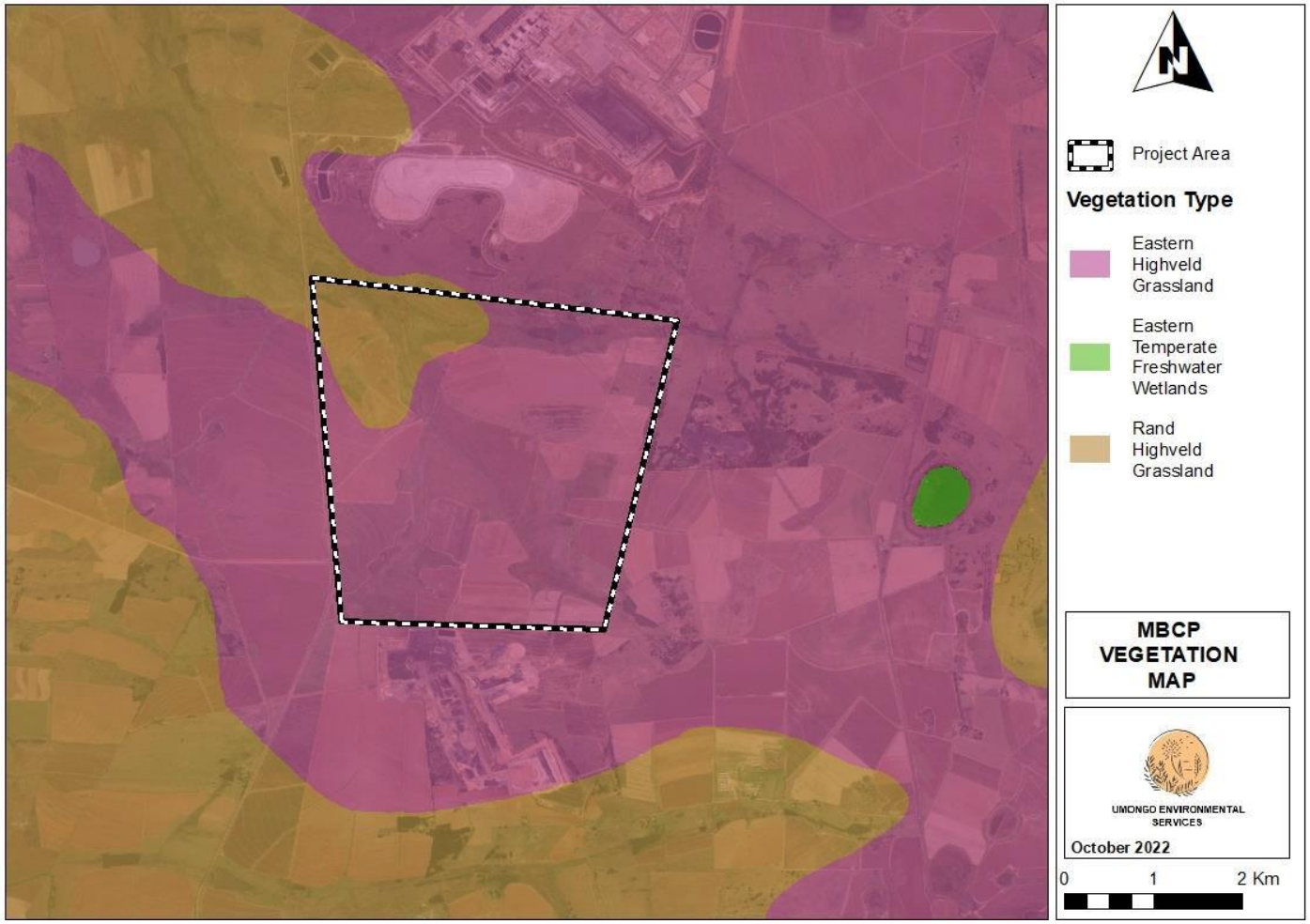

Figure 4: MBCP vegetation type map of the project area and the surrounding areas.

4.3 Biodiversity Conservation Context

4.3.1 Mpumalanga Biodiversity Sector Plan (MBSP)

The Mpumalanga Biodiversity Sector Plan (MBSP) defines the areas of land in the form of Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) required to ensure the persistence and conservation of biodiversity within the province. A tool to guide conservation and protected area expansion is provided by the spatial plan.

Upon examination of the dataset in relation to the project area it was found that:

a) The project area does not encompass or endanger and/or threaten any Critical Biodiversity Areas
b) There are no Ecological Support Areas within the project area.
c) The project area falls within a non-threatened other natural area, moderately modified and the majority is regarded as heavily modified (Figure 5).

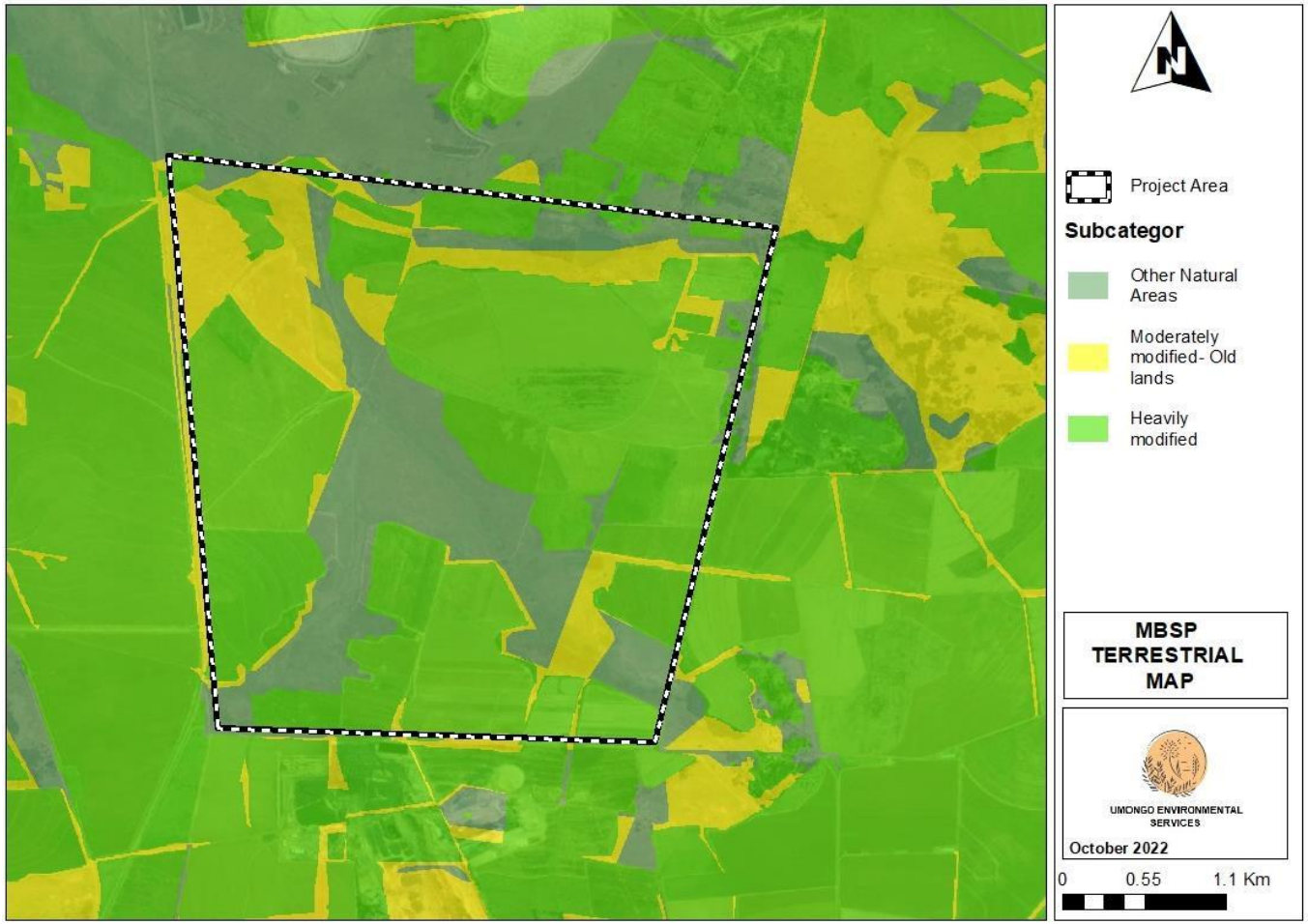

Figure 5: MBSP areas associated with the project area.

4.4 National Wetlands Map 5

The National Wetland Map 5 includes inland wetlands and estuaries, associated with river line data and many other data sets within the South African Inventory of Inland Aquatic Ecosystems (SAIIAE) 2018. Mapping the locality of wetlands is essential so that they may be classified into the different wetland ecosystem types across the country, which in turn can be used along with other data to identify wetlands of conservation significance. The wetland areas identified were predominantly CVB (Channelled Valley Bottom) and SEEP (Seepage) wetlands. The identified wetland areas of the NWP5 within the project area are presented in Figure 6 below.

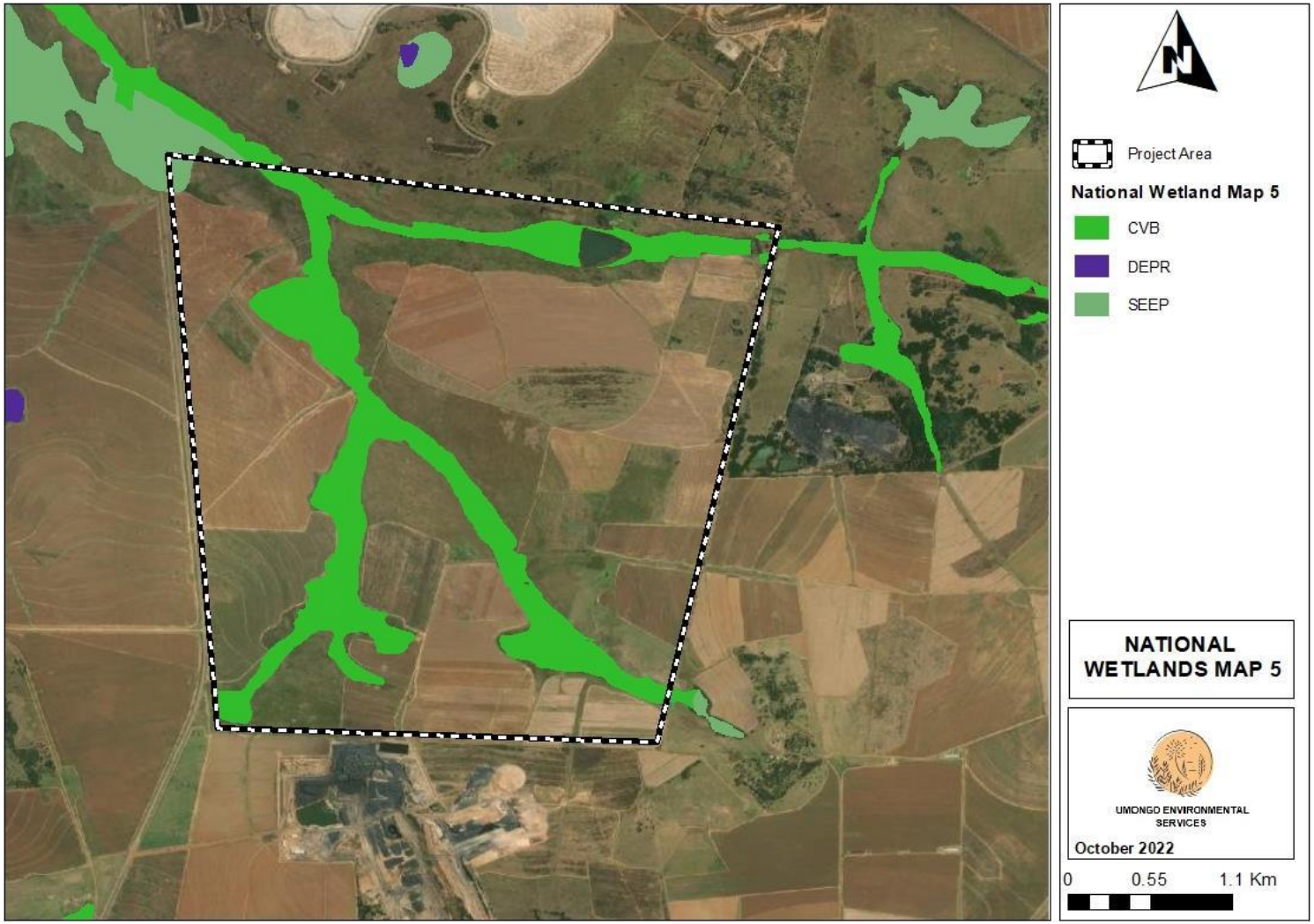

Figure 6: The National wetland map 5 wetland areas associated with the project area.

4.5 Ecosystem Threat Status

The remaining natural ecosystems within the project area, were considered as Vulnerable (VU) as seen in Figure 7 below. The state of the ecosystems indicated that these ecosystems are in a threatened state and are being lost at an increased risk of transformation. Furthermore, the protection of the ecosystems within the project area is poorly protected.

Figure 7: Ecosystem Threat status of habitat within the project area.

5 INVESTIGATION RESULTS

5.1 Flora

5.1.1 Desktop study results

South African National Biodiversity Institute (SANBI) datasets were overlaid on the quarter degree square to determine the availability of Red Data plant species or species of conservation significance. According to the South African Red data list categories done by SANBI, threatened species are species that are facing a high risk of extinction. Any species classified in the IUCN categories Critically Endangered, Endangered or Vulnerable is a threatened species whereas Species of conservation concern are species that have a high conservation importance in terms of preserving South Africa's high floristic diversity and include not only threatened species, but also those classified in the categories Extinct in the Wild (EW), Regionally Extinct (RE), Near Threatened (NT), Critically Rare, Rare, Declining and Data Deficient - Insufficient Information (DDD).

Table 3: Definitions of Red Data Status.

Family	Species	Threat Status
CR PE	Critically Endangered (Possibly Extinct)	Critically Endangered (Possibly Extinct) taxa are those that are, on the balance of evidence, likely to be extinct, but for which there is a small chance that they may be extant. Hence, they should not be listed as Extinct until adequate surveys have failed to record the taxon.
CR	Critically Endangered	A taxon is Critically Endangered when the best available evidence indicates that it meets any of the five International Union for Conservation of Nature (IUCN) criteria for Critically Endangered, and is therefore, facing an extremely high risk of extinction in the wild.
EN	Endangered	A taxon is Endangered when the best available evidence indicates that it meets any of the five IUCN criteria for Endangered, and is therefore facing an extremely high risk of extinction in the wild.
VU	Vulnerable	A taxon is Vulnerable when the best available evidence indicates that it meets any of the five IUCN criteria for Vulnerable and it is therefore considered to be facing a high risk of extinction in the wild.
NT	Near Threatened	A taxon is Near Threatened when available evidence indicates that it is close to meeting any of the five IUCN criteria for Vulnerable and it is therefore, likely to qualify for a threatened category in the near future.
D	Declining	A taxon is Declining when it does not meet any of the five IUCN criteria and does not qualify for the categories Critically Endangered, Endangered, Vulnerable or Near Threatened, but there are threatening processes causing a continuing decline in the population.

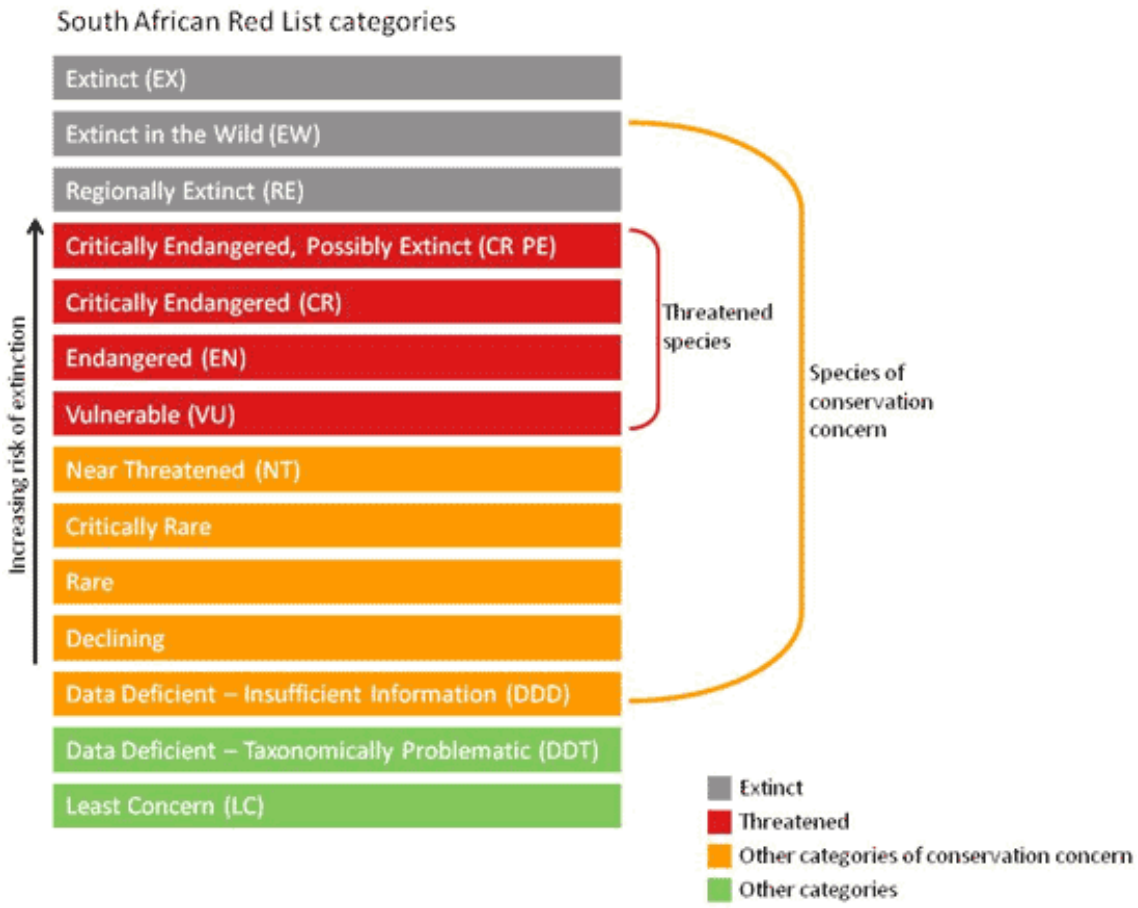

Figure 8: South African Red Data list categories according to SANBI.

The proposed project is located within 2528DD Quarter Degree Grid Square (QDGS) in South Africa. **Table 4** below highlights all the Red Data plant species which were recorded on 2528DD grid cells.

Table 4: Definitions of Red Data Status.

Family	Species	Conservation status
Acanthaceae	*Dicliptera magaliesbergensis K.Balkwill*	VU
Amaryllidaceae	*Boophone disticha (L.f.) Herb.*	Declining
Amaryllidaceae	*Crinum macowanii Baker*	Declining
Anacardiaceae	*Searsia gracillima (Engl.) Moffett var. gracillima*	NT
Apocynaceae	*Ceropegia turricula E.A.Bruce*	NT
Apocynaceae	*Stenostelma umbelluliferum (Schltr.) S.P.Bester & Nicholas*	NT
Apocynaceae	*Ceropegia decidua E.A.Bruce subsp. pretoriensis R.A.Dyer*	VU
Aquifoliaceae	*Ilex mitis (L.) Radlk. var. mitis*	Declining

Asphodelaceae	*Trachyandra erythrorrhiza (Conrath) Oberm.*	NT
Asphodelaceae	*Aloe peglerae Schönland*	EN
Asteraceae	*Gnaphalium nelsonii Burtt Davy*	Rare
Asteraceae	*Callilepis leptophylla Harv.*	Declining
Crassulaceae	*Adromischus umbraticola C.A.Sm. subsp. umbraticola*	NT
Crassulaceae	*Kalanchoe longiflora Schltr. ex J.M.Wood*	VU
Cucurbitaceae	*Cucumis humifructus Stent*	VU
Fabaceae	*Argyrolobium campicola Harms*	NT
Fabaceae	*Argyrolobium megarrhizum Bolus*	NT
Fabaceae	*Pearsonia bracteata (Benth.) Polhill*	NT
Fabaceae	*Acacia erioloba E.Mey.*	Declining
Fabaceae	*Melolobium subspicatum Conrath*	VU
Hyacinthaceae	*Drimia sanguinea (Schinz) Jessop*	NT
Hyacinthaceae	*Drimia altissima (L.f.) Ker Gawl.*	Declining
Hyacinthaceae	*Bowiea volubilis Harv. ex Hook.f. subsp. volubilis*	VU
Hypoxidaceae	*Hypoxis hemerocallidea Fisch., C.A.Mey. & Avé-Lall.*	Declining
Mesembryanthemaceae	*Gibbaeum petrense (N.E.Br.) Tischer*	VU
Mesembryanthemaceae	*Drosanthemum micans (L.) Schwantes*	EN
Orchidaceae	*Habenaria bicolor Conrath & Kraenzl.*	NT
Orchidaceae	*Habenaria kraenzliniana Schltr.*	NT
Orchidaceae	*Holothrix randii Rendle*	NT
Poaceae	*Festuca dracomontana H.P.Linder*	VU
Proteaceae	*Leucospermum cordifolium (Salisb. ex Knight) Fourc.*	NT
Rhizophoraceae	*Cassipourea malosana (Baker) Alston*	Declining
Zamiaceae	*Encephalartos friderici-guilielmi Lehm.*	NT
Zamiaceae	*Encephalartos lehmannii Lehm.*	NT
Zamiaceae	*Encephalartos horridus (Jacq.) Lehm.*	EN

5.1.1.1 Results of field investigation

The field investigation consisted of random sampling throughout the project area. The vegetation within the area had been largely disturbed by previous land uses for agricultural practices as presented Figure 9 below. The areas of grassland within the project area have been altered from the natural state with the grassland is dominated by Themeda triandra, Eragrostis curvula and Sporobolus africanus (Figure 10 below.). Species of Helichrysum and Hypoxis hemerocallidea were identified throughout the project area. Species of Cyperus esculentus and Juncus effusus were identified within the moist areas associated (watercourse) areas associated with the area. The overall plant diversity within the project area was considered low.

Figure 9:The disturbed areas within the project area.

Figure 10:Grassland within the project area project area.

5.1.1.2 Plant Species List

Table 5 below presents the plant species identified throughout the project area.

Table 5: Definitions of Red Data Status.

Species name	Common name	Conservation status
Andropogon eucomis	Snowflake grass	Least Concern
Myrrhis odorata	Sweet cicely	Least Concern
Arctotheca calendula	Cape dandelion	Least Concern
Argemone ochroleuca	White-flowered poppy	Invasive – 1b
Aristida congesta	Buffalo grass	Least Concern
Asphodelus fistulosus	Onionweed	
Centella asiatica		Least Concern
Cleretum bellidiforme	Bokbaai vygie	Least Concern
Cynodon dactylon	Couch grass	Least Concern
Cyperus esculentus		Least Concern
Datura stramonium	Bitter thorm apple	Invasive – 1b
Digitaria eriantha	Rhodes grass	Least Concern
Gomphocarpus fruticosus	Balloon plant	Least Concern
Eragrostis curvula	Weeping love grass	Least Concern
Erigeron bonariensis	Hairy fleabane	Least Concern
Erigeron canadensis	Horseweed	Least Concern
Erigeron divergens	Spreading fleabance	Least Concern
Gerbera jamesonii	Barbeton daisy	Least Concern
Glycine max	Soybean	Least Concern
Harpochloa falx		Least Concern
Helichrysum luteoalbum	Jersey cudweed	Least Concern
Helichrysum simillimum		Least Concern
Juncus effusus	Common rush	Least Concern
Kalanchoe synsepala	Kalanchoe	Least Concern
Luma apiculata	Chilean myrtle	Least Concern
Hypoxis hemerocallidea	African potato	Least Concern (Declining)
Pseudognaphalium californicum	California cudweed	Least Concern
Senecio flaccidus	Threadleaf ragwort	Least Concern

Senecio integerrimus	Lambstongue ragwort	Least Concern
Solanum nigrum	Black nightshade	Least Concern
Sporobolus africanus	Rat's tail grass	Least Concern
Tagetes minuta	Khakibos	Least Concern
Themeda triandra	Red grass	Least Concern
Verbena bonariensis	Purple top	Category 1b invasive

5.1.2 Species of conservation significance, Threatened Species and medicinal plants

The National Environmental Biodiversity Act (Act 10 of 2004) (as amended) places an emphasis on conserving biodiversity in each province and as such all indigenous resources must be sustainably utilised. Additionally, legislation exists at both national and provincial level for the conservation of plant species with medicinal properties. Plants recorded within the project area with medicinal value and listed as Declining under the IUCN include inter alia: Hypoxis hemerocallidea. The identified individuals of Hypoxis hemerocallidea are presented in **Figure 11** and the locations of the Hypoxis hemerocallidea species are presented in **Figure 12.**

Figure 11: Identified Hypoxis hemerocallidea plants.

Figure 12: Location of identified Hypoxis hemerocallidea plants.

5.1.3 Habitat Units

The identified habitat units within the project area are presented in Figure 13 below. The majority of the project area has been modified for crop fields with small pockets of transformed grasslands. Hypoxis hemerocallidea grow within the grassland habitat and although these plants have not been listed as Red Data plants, they can be considered Orange Data and of medicinal importance. The abundance of the individuals and the large habitat distribution allows for the plant species to be regarded as Least Concern; however, they have been listed as Declining which suggests habitat and individual plants losses. It was recommended that the individuals of Hypoxis hemerocallidea that fall within the development footprint be relocated to the edge of the wetland habitat as detailed in **Appendix 1**.

Should any of the plants be damaged during relocation, a recommended strategy to multiply individuals is separation (PlantZA, 2022); however, this is not ideal as plants don't spread from the bulb. A more effective way is to cut the bulb (corm) just above the roots. Place the bottom part of the bulb with roots just below soil and keep moist.

Figure 13: Habitat units occurring within the project area.

5.1.4 Alien Invasive Plants

Invasive alien plants are described as species which are 'non-indigenous' to an area and which have been introduced from other countries either intentionally (for domestic/ornamental or commercial use) or accidentally; furthermore, they have the ability to reproduce and spread without the direct assistance of people into natural or semi-natural habitats and are destructive to biodiversity and human interests (WESSA-KZN, 2008). Notice 3 of the National Environmental Management: Biodiversity Act 2004 (Act No, 10 of 2004) lists 379 plant species that are legally declared invasive species. Each species is assigned to one of three categories based on the level of threat posed by the species and the legal status assigned to each:

Table 6: Alien Invasive Plants Category.

Category 1a	Plant species that must be combatted or eradicated.
Category 1b	Plant species that must be controlled.
Category 2	Plant species that must not be allowed to spread outside any property.
Category 3	Plant species that when occurring in riparian areas must be considered to be category 1b Listed Invasive Species and must be managed according to regulation 3 of NEM:BA, 2014.

Figure 14 shows some of the alien plants encountered in the project area. Other invasive plant species were identified within the grassland areas and are at times considered naturalised.

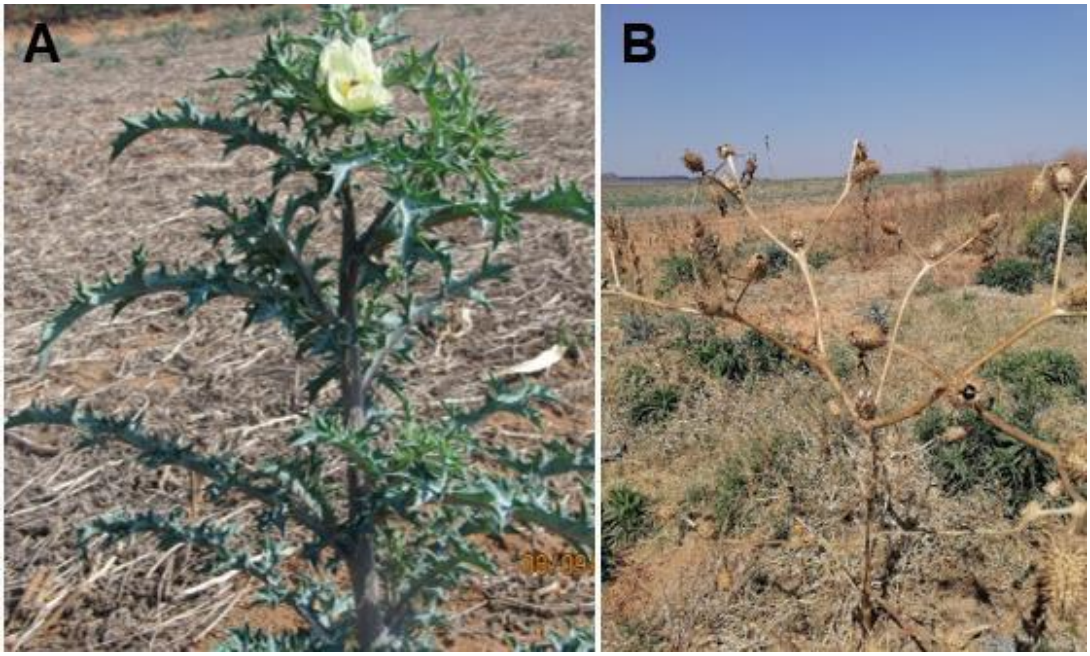

Figure 14: The alien invasive plant species identified within the project area – a) Argemone ochroleuca b) Datura sta.

5.2 Fauna

The survey focused on the current status of threatened faunal species (mammals, birds, reptiles and amphibians) occurring or likely to occur within the proposed study area. During the site visit faunal presence was verified by visual sightings and images collected. No trapping or mist netting were conducted during the site visit for this project.

5.3 Avifauna

According to results obtained from the desktop assessment, a total of 156 species were recorded, with eight (8) species classified as Red Data species. Red Data species with a reporting rate of ≤ 1% were not included in the study as the likelihood of being present within the project area is very low. Reporting rates are an indication of the relative density of a species on the ground in that it reflects the number of times that a species was recorded relative to the total amount of cards that were completed for the pentad. **Figure 15**. presents bird species of conservation concern.

Table 7: Red Data bird species potentially occurring within project area.

Common Name	Species Name	Conservation Status
Swallow, Blue	*Hirundo atrocaerulea*	CR
Stork, Black	*Ciconia nigra*	NT
Secretarybird, Secretarybird	*Sagittarius serpentarius*	NT
Falcon, Lanner	*Falco biarmicus*	NT
Eagle, African Crowned	*Stephanoaetus coronatus*	NT
Kingfisher, Half-collared	*Alcedo semitorquata*	NT
Ground-thrush, Orange	*Zoothera gurneyi*	NT
Warbler, Broad-tailed	*Schoenicola brevirostris*	NT

5.3.1 Field work results

During the site visit a total of 11 bird species were recorded within the project area (**Figure 15**.). The most commonly recorded species were species often associated with anthropogenically modified landscapes (Common Myna and African Olive Pigeon).

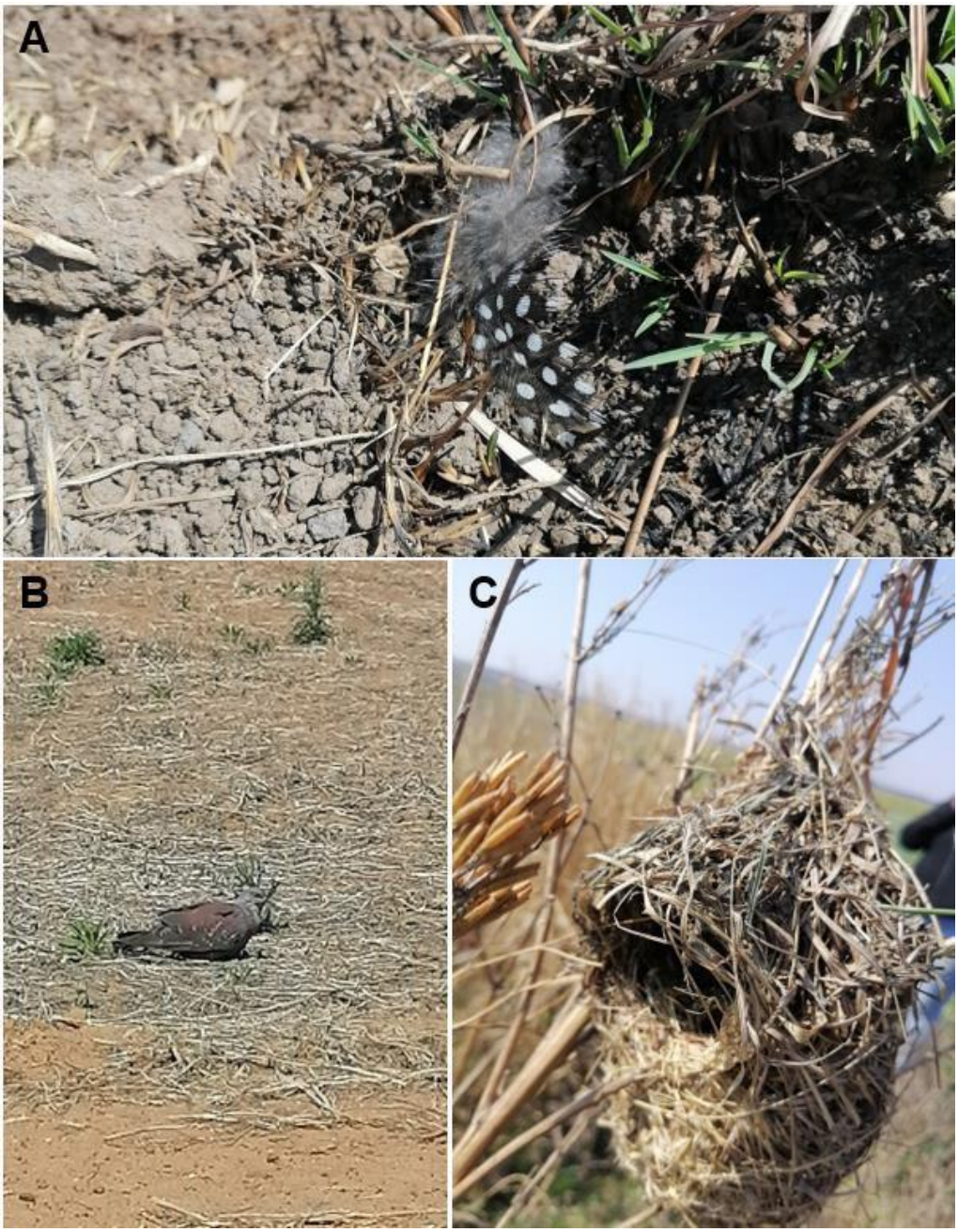

Figure 15: Bird identifiers on site – a) Helmeted Guinea foul feather b) Olive pigeon c) Southern Masked Weaver nest.

Table 8: Bird species recorded within the project area.

Scientific name	Common name	Conservation status
Phalacrocorax africanus	Reed Cormorant	Least Concern
Trochocercus cyanomelas	Blue-mantled Crested-flycatcher	Least Concern

Passer domesticus	House Sparrow	Least Concern
Malaconotus blanchoti	Grey-headed Bush-shrike	Least Concern
Bostrychia hagedash	Hadeda Ibis	Least Concern
Acridotheres tristis	Common Myna	Least Concern
Corvus capensis	Cape Crow	Least Concern
Numida meleagris	Helmeted Guinea foul	Least Concern
Ploceus velatus	Southern Masked Weaver	Least Concern
Corvus albus	Pied Crow	Least Concern
Columba arquatrix	African Olive Pigeon	Least Concern

5.3.1.1 Habitat Associated with Red Data bird species

Watercourses

The most avifaunal activity was recorded in the vicinity of the watercourse in the area. The identified watercourse is presented in Figure 16. There were no species of conservation concern identified during the field assessment.

Figure 16: Watercourse in the project area that is a habitat for bird species.

5.3.1.2 Avifaunal species of concern

No threatened species (Red Data species) were recorded within the project area during the survey. The increased levels of anthropogenic disturbance and associated habitat transformation and degradation has likely resulted in the displacement of specialist avian species as well as threatened species. In most cases these are species sensitive to habitat disturbances and display secretive behaviour characteristics. However, it is recommended that annual assessments can be undertaken.

6 ECOLOGICAL CONDITION AND SENSITIVITY ANALYSIS

The assessment aided in identifying vegetation communities and delineating their respective boundaries, the various vegetation communities defined for the project area were further assessed qualitatively in terms of their ecological condition in order to estimate relative habitat sensitivity. The ecological function describes the structural and functional integrity of the vegetation communities/habitats which support the faunal communities. It also refers to the degree of ecological connectivity between the identified vegetation communities/habitats and other systems within the landscape (such as a combination of species composition; structural intactness and existing levels of anthropogenic disturbance, woody encroachment, etc.).

Table 9: Generic matrix used for the estimation and rating of vegetation ecological condition (using joint consideration of species composition and structural intactness).

		SPECIES COMPOSITION			
		Natural	Good	Fair	Poor
		Representative of reference vegetation type	>75% of expected species occur compared with an undisturbed site in a comparable vegetation type	<75% of expected species occur compared with an undisturbed site in a comparable vegetation type	<25% of expected species occur compared with an undisturbed site in a comparable vegetation type
Structural Intactness	Contiguous (reference)	Natural	Good	Fair	Poor
	Clumped	Good	Good	Fair	Poor
	Scattered/patchy cover	Fair	Fair	**POOR**	Poor
	Sparse	Poor	Poor	Poor	Very Poor

Systems with a high degree of landscape connectivity (i.e., high ecological function) amongst each other are perceived to be more sensitive. The generic matrix presented in Table 10-12 below, was used for the assessment of vegetation sensitivity.

Table 10: Generic matrix used for the estimation of habitat sensitivity (based on the joint consideration of habitat condition and threat status of the vegetation type).

		HABITAT/VEGETATION CONDITION				
		Natural	**Good**	**Fair**	**Poor**	**Very Poor/ Transformed**
Vegetation Threat Status	**CRITICALLY ENDANGERED**	**High**	**High**	**High**	Moderate	Low
	Endangered	**High**	**High**	**High**	Moderate	Low
	Vulnerable	**High**	**High**	Moderate	**LOW**	Low
	Near Threatened	Moderate	Moderate	Moderate	Low	Low
	Least Threatened	Moderate	Moderate	Low	Low	Very Low

Ecological Sensitivity can be summarized according to the criteria presented in Table 10

Table 11: Ecological Sensitivity Categories.

High –	Sensitive vegetation communities with either low inherent resistance or resilience towards disturbance factors or vegetation that are considered important for the maintenance of ecosystem integrity. Most of these vegetation communities represent late succession ecosystems with high connectivity with other important ecological systems.
Medium-	Vegetation communities that occur at disturbances of low-medium intensity and representative of secondary succession stages with some degree of connectivity with other ecological systems.
Low –	Degraded and highly disturbed vegetation with little ecological function.

Table 12: Summary of the ecological condition and sensitivity assessment for the various terrestrial vegetation communities and habitat types.

Vegetation Community	Condition	Threat Status	Ecological Sensitivity
Project area	Poor	VU	Low

7 IMPACT ASSESSMENT

Any development activity within a natural system has a potential to impose an impact in that particular environment as well as the surrounding. In most instances the associated impact to development activity are negative. The main aim of this phase of study is to identify and asses

the significance of the potential impacts which may be a result of the development and to provide a description of the mitigation measures required so as to restrict the identified impacts on the natural environment. Significance scoring both assesses and predicts the significance of environmental impacts through evaluation of the following factors; probability of the impact; duration of the impact; extent of the impact; and magnitude of the impact. The significance of environmental impacts is then assessed taking into account any proposed mitigations. The significance of the impact "without mitigation" is the prime determinant of the nature and degree of mitigation required. Each of the above impact factors have been used to assess each potential impact using ranking scales (Table 15).

Unknown parameters are given the highest score (5) as significance scoring follows the Precautionary Principle.

Table 13: Summary of the ecological condition and sensitivity assessment for the various terrestrial vegetation communities and habitat types.

Significance Points = (Magnitude + Duration + Extent) x Probability.

The maximum value is 100 Significance Points.

Potential Environmental Impacts are rated as high, moderate or low significance as per the following:

Table 14: Summary of the ecological condition and sensitivity assessment for the various terrestrial vegetation communities and habitat types

Score	Label	Motivation
<10	Negligible	The impact is very small to absent
10-20	Low	where this impact would not have a direct influence on the decision to develop in the area
20-50	Medium	where the impact could influence the decision to develop in the area unless it is effectively mitigated
50 - 70	High	where the impact must have an influence on the decision process to develop in the area
>70	Very high	Where the impact may constitute a fatal flaw for the project

Table 15: Possible significance scores based on Effect and Likelihood ratings

Likelihood	Effect																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Very improbable (1)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Improbable (2)	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
Probable (3)	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
Highly probable (4)	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80
Definite (5)	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

Each impact was assessed based on the methodology above, and a table produced, indicating the scores and the overall significance rating both without and with mitigation. Where relevant, mitigation measures are recommended.

The project can be divided into two phases:

- Construction phase; and
- Operation phase.

7.1 Loss of faunal habitat (flora) and ecological structure

The construction phase and operational phase of the 60 years Ash Disposal Facility (ADF) will result in the disturbance of faunal habitats and loss of plant species within the area. This impact relates to the complete removal or partial destruction/disturbance of existing vegetation by machinery and workers, impacting directly on the ecological condition of natural vegetation and habitat availability. These activities will have an impact on foraging, breeding and roosting ecology of faunal species. Loss of vegetation generally affects nutrient cycles, removes the organic litter layer and results in habitat fragmentation and destruction of wildlife corridors.

The habitat is however already largely transformed and fragmented by commercial farming activities and the project area is currently utilised as cultivated agricultural land and is not a unique habitat within the landscape. It is not envisaged that any Red Data species will be displaced by the habitat transformation that will take place as a result of the construction and operation of the proposed development. The impact on smaller, non-Red Data species that are potentially breeding in the area will be local in extent, in that it will not have a significant effect on regional or national populations.

During the operational phase, the extent of habitat loss will remain the same as only improvements and minimal addition to the current structures will take place.

Table 16: Loss of faunal habitat and ecological structure.

Flora and faunal habitat impact									
Potential Impact		**Recommended Mitigation**							
Loss of habitat and ecological structure		• All construction and maintenance activities must be carried out according to the generally accepted environmental best practice and the temporal and spatial footprint of the development must be kept to a minimum. In particular, care must be taken in the vicinity of the drainage lines and existing roads must be used for access during construction. • The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area. • Edge effects of all construction and operational activities, such as erosion and alien plant species proliferation, which will affect faunal habitats adjacent to the development area, need to be strictly managed. This can be achieved through the clearing of alien invasive vegetation within the development footprint. The removal of this vegetation will provide job opportunities for community members. • Any natural areas beyond the development footprint, which have been affected by the construction activities, must be rehabilitated using indigenous plant species. • Education and awareness campaigns on faunal species and their habitat are recommended to help increase awareness, respect and responsibility towards the environment for all staff and contractors.							
Probability		Duration		Extent		Magnitude		Significance (without mitigation)	Significance (with mitigation)
without	with	without	with	without	with	without	with		
Construction Phase									
4	3	3	2	2	1	6	4	44 (low)	28 (low)
Operational Phase									
4	3	5	5	2	1	6	4	52 (medium)	44 (low)

7.2 *Spread of alien vegetation*

Any disturbances of the indigenous vegetation communities within the project area will provide opportunity for alien invasive species encroachment. This will result in the negative impact on the functionality of the vegetation community within the project area. Alien species generally out-compete indigenous species for water, light, space and nutrients as they easily adapt in changing environmental conditions and with this special adaptation, they have they easily invade a wide range of ecological niches (Bromilow, 2010). Alien invader plant species pose an ecological threat as they alter habitat structure, lower biodiversity variation and quality of species, change nutrient cycling and productivity and modify food webs (Zedler, 2004).

Table 17: Loss of faunal habitat and ecological structure.

<table>
<tr><th colspan="10">Alien Vegetation</th></tr>
<tr><td colspan="2">Potential Impact</td><td colspan="8">Recommended Mitigation</td></tr>
<tr><td colspan="2">Spread of alien vegetation</td><td colspan="8">• Indigenous plants naturally growing along proposed infrastructure alternatives, but that would be otherwise destroyed during clearing for development purposes should be incorporated into landscaped areas.
• In accordance with the requirements of the National Environmental Management: Biodiversity Act (10/2004): Alien and Invasive Species Regulations, the Applicant/Contractor must ensure Alien invasive species and noxious weeds are effectively controlled by implementing a site specific Alien Invasive Eradication Programme.
• Vegetation clearing should be kept to a minimum, and this should only occur where it is absolutely necessary and the use of a brush-cutter is highly preferable to the use of earth-moving equipment.
• Rehabilitate all disturbed areas as soon as the construction is completed within the proposed development areas.
• Ensure that all personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm and this can be achieved through provision of appropriate awareness to all personnel.
• All trees that have been identified to be removed are to be marked and verified with an Ecologist/ECO and carefully removed.
• The location of the site office and Contractor's camp must be situated outside indigenous vegetation.</td></tr>
<tr><td colspan="2">Probability</td><td colspan="2">Duration</td><td colspan="2">Extent</td><td colspan="2">Magnitude</td><td>Significance (without mitigation)</td><td>Significance (with mitigation)</td></tr>
<tr><td>without</td><td>with</td><td>without</td><td>with</td><td>without</td><td>with</td><td>without</td><td>with</td><td></td><td></td></tr>
<tr><td colspan="10">Construction Phase</td></tr>
<tr><td>4</td><td>3</td><td>2</td><td>1</td><td>1</td><td>1</td><td>4</td><td>2</td><td>28 (low)</td><td>12 (low)</td></tr>
<tr><td colspan="10">Operational Phase</td></tr>
</table>

4	3	5	3	1	1	6	4	48 (low)	18 (low)

7.3 Direct faunal impacts

Activities involving the clearing of natural vegetation will result in the loss of faunal species. Faunal diversity within all habitat units has been negatively impacted as a result of historic and on-going disturbances associated with agricultural and general anthropogenic activities. It is not envisaged that any red data species will be present on the site and thus directly impacted as a result of the development. The proposed development will lead to a further loss of faunal diversity. During the operational phase, a further loss of faunal diversity and ecological integrity will occur due to the continued human activity.

Table 18: Direct faunal impacts.

Direct faunal impacts									
Potential Impact	**Recommended Mitigation**								
Direct faunal impacts	• Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO). • It is recommended that the speed limit of 30km/hr is implemented on all roads within the project area during all phases in order to minimise risk to fauna from vehicles. • No trapping or hunting of fauna is to take place. Access control must be implemented to ensure that no illegal trapping or poaching takes place. • Should any Red Data faunal species be noted within the development footprint areas, these species must be relocated to similar habitats within the vacant land with the assistance of a suitably qualified Ecologist. • Any fauna directly threatened by the construction activities must be removed to a safe location by the ECO or qualified Ecologist. • All staff and contractors must undergo an environmental induction course held by the ECO as well as faunal education and awareness programmes. • The above mitigation measures pertain to the construction phase and no mitigation measures put in place during the operation phase will reduce the negative impacts associated with the development.								
Probability		Duration		Extent		Magnitude		Significance (without mitigation)	Significance (with mitigation)
without	with	without	with	without	with	without	with		
Construction Phase									
4	3	3	2	2	1	6	4	44 (low)	28 (low)
Operational Phase									

4	3	5	5	2	1	6	4	52 (medium)	44 (low)

8 CONCLUSION

A terrestrial ecological survey was undertaken in September 2022 to as part of the ecological survey, search and rescue of plants species for the construction of the 60-year ash disposal facility to be constructed within the project area. The vegetation within the project area was found to be largely transformed by human disturbances relating to the utilisation of the project area for agricultural practices. The disturbances have had knock-on- effects on sensitive ecological habitats. The grassland has been transformed from the reference state vegetation. No Red Data plant species were recorded within the project area. Hypoxis hemerocallidea was the only plant species of conservation concern identified and listed as Declining.

There was minimal avifaunal activity throughout the project area. The low activity is attributed to the timing of the survey, habitat availability and the land use practices. No Red Data species were encountered within the project area due to high levels of disturbance and habitat transformation already present within the site.

The impacts anticipated from the proposed construction and operational phase relate to loss of habitat, direct faunal impacts, disturbance, and reduced landscape connectivity. These impacts are expected to be of low significance as the current project area is utilised for cultivated agriculture.

Compliance with all projects related authorizations and permits including water use license issued by the relevant authorities under the relevant legislations must be considered at all times during the construction and operational phase of the proposed project. The Environmental Management Programme (EMPr) must be considered as evolving document should any new impact/s surface during the construction and operation phase of the proposed project, such document must be revised and amended accordingly.

The relocation of the *Hypoxis hemerocallidea* (African potato) from the proposed development footprint into the edge of the wetland area (*i.e.,* within the annual and/or temporal zones), was undertaken following the prescribed methodology in Terrestrial Ecological Assessment Report 2022, which forms part of this project (See attached report, **Appendix 1**).

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APPENDIX 1:

REMOVAL AND RELOCATION OF HYPOXIS HEMEROCALLIDEA (AFRICAN POTATO) WITHIN THE CONSTRUCTION AREA OF THE 60 YEAR ASH DISPOSAL FACILITY AT KUSILE POWER STATION,

MPUMALANGA PROVINCE

JANUARY 2023

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JANUARY 2023

PRJ_R_1/Rev0

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REMOVAL AND RELOCATION OF HYPOXIS HEMEROCALLIDEA (AFRICAN POTATO) WITHIN THE CONSTRUCTION AREA OF THE 60 YEAR ASH DISPOSAL FACILITY AT KUSILE POWER STATION, MPUMALANGA PROVINCE

JANUARY 2023

Conducted on behalf of:

Eskom

Compiled by:

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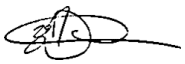
Humbelani Ramarumo (Cert.Sci.Nat)

INDEPENDENT SPECIALIST:



Ndumiso Dlamini (Pr. Sci.Nat)

Company Name: Umongo Environmental Services

SACNASP Reg. No. 116579

Reviewed by:

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Simon Netshiozwi (Pr. Sci. Nat)

kimopax GROUP

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Declaration of Independence by Specialist

I, **Ndumiso Dlamini**, in my capacity as a specialist consultant, hereby declare that I -

- act as an independent consultant;
- 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;
- declare that there are no circumstances that may compromise my objectivity in performing such work;
- do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998);
- have no, and will not engage in, conflicting interests in the undertaking of the activity;
- undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998);
- have expertise in conducting the specialist report relevant to this application, including knowledge of the National Environmental Management Act, 1998 (Act No. 107 of 1998), regulations and any guidelines that have relevance to the proposed activity;
- based on information provided to me by the project proponent and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional ability;
- undertake to have my work peer reviewed on a regular basis by a competent specialist in the field of study for which I am registered; and
- as a registered member of the South African Council for Natural Scientific Professions, will undertake my profession in accordance with the Code of Conduct of the Council, as well as any other societies to which I am a member.

Signature
Date Signed: **12-10-2022**

Name and Surname of Specialist: **Ndumiso Dlamini** (Pr. Sci.Nat)

Designation: **Ecologist**

Company Name: Umongo Environmental Services
SACNASP Reg. No. **116579**

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1 INTRODUCTION

Kimopax (Pty) Ltd was commissioned to conduct removal and relocation of plant species as per ecological report findings. This form part of the authorised project for construction and operation of Kusile Power Station 60 years Ash disposal facility. This removal and relocation forms part of the search and rescue of plants species prior to the commencement of the construction activity in compliance with the environmental authorisation (EA) of this project. The Eskom Kusile Power station 60 years ADF Facility, hereafter referred to as the "project area". The project area (**Figure 1-1** and **Figure 1-2**) is located approximately 26km west of eMalahleni and on the border of Gauteng-Mpumalanga. The project area is located within Victor Khanye local municipality and greater Nkangala district municipality.

Figure 1-1: Location of the project area in relation to the surrounding areas.

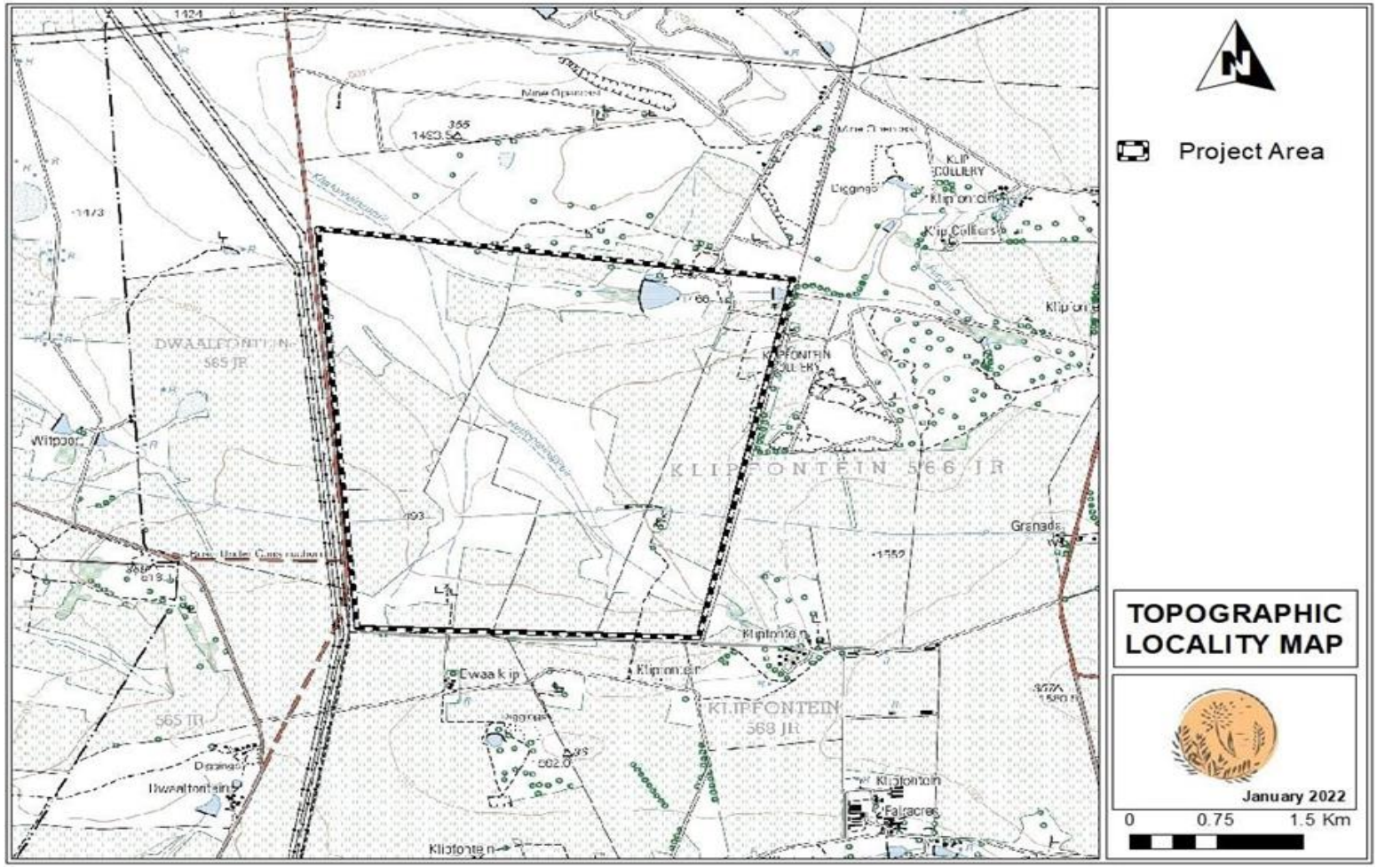

Figure 1-2: Project area depicted on a 1:50 000 topographical map.

2 RELEVANT LEGISLATIONS AND GUIDELINES

During the removal and relocation of plant species the following legislations and guidelines were considered.

2.1 National Environmental Management Act (Act 107 of 1998)

The National Environmental Management Act (NEMA) (Act 107 of 1998) and the associated Regulations (No R. 324, No R. 325 and No R. 326) as amended (April 2017), states that prior to any development taking place within a wetland or riparian area, an environmental authorisation process needs to be followed. This could follow either the Basic Assessment Report (BAR) process or the Environmental Impact Assessment (EIA) process depending on the type and location of the proposed activity.

2.2 National Environmental Management: Biodiversity Act (Act 10 of 2004)

The National Environmental Management: Biodiversity Act (10 of 2004), (NEMBA) provides for the consolidation of biodiversity legislation through establishing national norms and standards for the management of biodiversity across all sectors and by different management authorities. Certain activities, known as Restricted Activities, are regulated on listed species using permits by a special set of regulations published under the Act. Restricted activities regulated under the act are keeping, moving, having in possession, importing and exporting, and selling of listed species.

2.3 The National Forest Act (84 of 1998)

The National Forest Act (84 of 1998) aims to meet the following objectives:

a) Promote the sustainable management and development of forests for the benefit of all.
b) Create the conditions necessary to restructure forestry in South Africa.
c) Provide special measures for the protection of certain forests and protected trees.
d) Promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes.
e) Promote community forestry.
f) Promote greater participation in all aspects of forestry and the forest products industry by persons disadvantaged by unfair discrimination.

2.4 Conservation of Agricultural Resources Act (Act 43 of 1983)

This act regulates the utilisation and protection of wetlands, soil conservation and all matters relating thereto; control and prevention of veld fires, control of weeds and invader plants, the prevention of water pollution resulting from farming practices and losses in biodiversity.

2.5 White Paper on Conservation and Sustainable Use of South Africa's Biological Diversity (1997)

The policy comprises part of the broader context wherein national environmental policy has been formulated. It further sets the agenda for defining the strategy for conservation of South Africa's biodiversity.

3 REMOVAL AND RELOATION OF PLANT SPECIES

According to the findings of the ecological assessment search and rescue undertaken in October 2022, the *Hypoxis hemerocallidea* (African potato) was found occurring within a grassland habitat located within the boundaries of the project area. The abundance of the individuals and the large habitat distribution allows for the plant species to be regarded as Least Concern; however, they have been listed as Declining which suggests habitat and individual plant losses. This necessitates the removal and relocation of the *Hypoxis hemerocallidea* (African potato), to avoid further loss of this plant species. The individual plant species were removed from the development footprint and relocated to the edge of the wetland habitat (temporally/seasonal zone of the wetland habitat) as depicted in **Figure 3-1** below. It should be noted the removal and relocation of the *Hypoxis h* emerocallidea (African potato), was undertaken following the methodology prescribed in the Terrestrial Ecological Assessment Report, 2022. 400 individual species of *Hypoxis hemerocallidea* (African potato) were removed from the development footprint and relocated into the boundaries of the wetland habitat. The area where individual African potato species were relocated was demarcated. **Figure 3-2** to **Figure 3-5** below presents the overview and surroundings of the area where the *Hypoxis hemerocallidea* (African potato) were removed from and the surroundings of the area this plant species removal into following the best practice methodology as prescribed in the Terrestrial Ecological Assessment Report, 2022.

Figure 3-1: Areas for Removal (A) (Latitude: -25.9538; Longitude: 28.9013) and Relocation (B) (Latitude: -25.9569; Longitude: 28.9082) of the *hypoxis hemerocalldea* plant species

Figure 3-2: An area where the plant species of interest were found occurring.

Figure 3-3: An establishment of an area for relocation of the plant species.

Figure 3-4: Removal and transportation of plant species into the relocation area.

Figure 3-5: Replanting of the plant species into the relocation area.

(Latitude: -25.9569; Longitude: 28.9082)

4 CONCLUSION

The relocation of the *Hypoxis hemerocallidea* (African potato) from the proposed development footprint into the edge of the wetland area (*i.e.,* within the seasonal and/or temporal zones), was undertaken following the prescribed methodology in Terrestrial Ecological Assessment Report 2022, which forms part of this project. The edge of the wetland area was deemed the suitable area for the establishment of the relocation area of the African potato plant species as no development is planned to disturb such areas.

This relocation area is demarcated for ease of identification and environmental monitoring and management during the duration of the proposed project.

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