TERRESTRIAL ECOLOGICAL ASSESSMENT FOR THE PROPOSED MAGEZA MALL PROJECT SITUATED WITHIN THE MSUNDUZI MUNICIPALITY, KWAZULU-NATAL.

JUNE 2021

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Specialist Declaration

I **Bryan Walter Paul, on the 28 June 2021 declare that –**

- I Act as independent specialist consultants, in this application, in the field of ecology;
- Do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of this appointment;
- Have, and will have, no vested interest in this project and/ investigation;
- 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 have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required by the competent authority;
- Will provide the competent authority with access to all the information at our disposal regarding the project, whether such information is favourable to the client and/ or client's representative.

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Signature of Specialist 

Reviewer Declaration

I **Dr. Craig Widdows, on the 3rd of July 2021 declare that –**

- I Act as independent specialist reviewer, in this application, in the field of ecology;
- Do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of this appointment;
- Have, and will have, no vested interest in this project and/ investigation;
- 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 have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required by the competent authority;
- Will provide the competent authority with access to all the information at our disposal regarding the project, whether such information is favourable to the client and/ or client's representative.

External Reviewer	Ecological Specialist
Contact Person	Dr. Craig Widdows
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Signature of Specialist

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INDEMNITY AND CONDITIONS RELATING TO THIS REPORT

The findings, results, observations, conclusions and recommendations given in this report are based on the authors best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and the abovementioned authors reserve the right to modify aspects of the report including the recommendations if and when new information may become available from on-going research or further work in this field, or pertaining to this investigation.

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Suggested report citation:
Paul, B (2021). Terrestrial Ecological Assessment for the Proposed Mageza Mall Project Situated within the Msunduzi Municipality, KwaZulu-Natal. For Mondli Consulting Services.

LIST OF ABBREVIATIONS

ACRONYM	**EXPANSION**
CBA	CRITICAL BIODIVERSITY AREA
ECO	ENVIRONMENTAL COMPLIANCE OFFICER
EDTEA	ECONOMIC DEVELOPMENT, TOURISM AND ENVIRONMENTAL AFFAIRS
EIA	ENVIRONMENTAL IMPACT ASSESSMENT
EMPR	ENVIRONMENTAL MANAGEMENT PROGRAMME
HA	HECTARE
KM	KILOMETRES
M	METRES
M^2	SQUARE METRES
MM	MILLIMETRES
NEMA	NATIONAL ENVIRONMENTAL MANAGEMENT ACT
NFA	NATIONAL FOREST ACT

SPECIALIST REPORTING REQUIREMENTS

Specialist reports are required to be undertaken in line with Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 of the National Environmental Management Act (NEMA; Act No 107 of 1998) when Applying for Environmental Authorisation, dated 2020 March 2020. The Protocol for the specialist assessment and impacts on terrestrial biodiversity applies.

No.	Minimum Report Content Requirements	Relevant Section in Report
2	**Terrestrial Biodiversity Species Assessment**	
2.1	The assessment must be prepared by a specialist registered with the South African Council for Natural Scientific Professionals (SACNASP) with expertise in the field of terrestrial biodiversity.	Compliant Appendix C
2.2	The assessment must be undertaken on the preferred site and within the proposed development footprint.	Compliant Section 7
2.3	The assessment must provide a baseline description of the site which includes, as a minimum, the following aspects:	
2.3.1	A description of the ecological drivers or processes of the system and how the proposed development will impact these.	Section 7
2.3.2	Ecological functioning and ecological processes (e.g. fire, migration, pollination, etc.) that operate within the preferred site.	Section 7
2.3.3	The ecological corridors that the proposed development would impede including migration and movement of flora and fauna.	Section 7.2.3
2.3.4	The description of any significant terrestrial landscape features (including rare or important flora-faunal associations, presence of strategic water source areas (SWSAs) or freshwater ecosystem priority area (FEPA) sub-catchments).	Section 6.1
2.3.5	A description of terrestrial biodiversity and ecosystems on the preferred site, including: (a) main vegetation types; (b) threatened ecosystems, including listed ecosystems as well as locally important habitat types identified; (c) ecological connectivity, habitat fragmentation, ecological processes and fine - scale habitats; and (d) species, distribution, important habitats (e.g. feeding grounds, nesting sites, etc.) and movement patterns identified.	Section 6.1 Section 6.2 Section 7.2.1 Section 7.2.2 Section 7.2.3
2.3.6	The assessment must identify any alternative development footprints within the preferred site which would be of a low sensitivity as identified by the screening tool and verified through the site sensitivity verification.	N/A not alternatives available.
2.3.7	The assessment must be based on the results of a site inspection undertaken on the preferred site and must identify:	
2.3.7.1	Terrestrial Critical Biodiversity Areas (CBAs), including: (a) the reasons why an area has been identified as a CBA; (b) an indication of whether or not the proposed development is consistent with	Section 6.1

	maintaining the CBA in a natural or near natural state or in achieving the goal of rehabilitation; (c) the impact on species composition and structure of vegetation with an indication of the extent of clearing activities in proportion to the remaining extent of the ecosystem type(s); (d) the impact on ecosystem threat status; (e) the impact on explicit subtypes in the vegetation; (f) the impact on overall species and ecosystem diversity of the site; and (g) the impact on any changes to threat status of populations of species of conservation concern in the CBA.	
2.3.7.2	Terrestrial Ecological Support Areas (ESAs), including: (a) the impact on the ecological processes that operate within or across the site; (b) the extent the proposed development will impact on the functionality of the ESA; and (c) loss of ecological connectivity (on site, and in relation to the broader landscape) due to the degradation and severing of ecological corridors or introducing barriers that impede migration and movement of flora and fauna.	N/A
2.3.7.3	Protected areas as defined by the National Environmental Management: Protected Areas Act, 2004 including- (a) an opinion on whether the proposed development aligns with the objectives or purpose of the protected area and the zoning as per the protected area management plan.	N/A
2.3.7.4	Priority areas for protected area expansion, including- (a) the way in which in which the proposed development will compromise or contribute to the expansion of the protected area network.	N/A
2.3.7.5	SWSAs including: (a) the impact(s) on the terrestrial habitat of a SWSA; and (b) the impacts of the proposed development on the SWSA water quality and quantity (e.g. describing potential increased runoff leading to increased sediment load in water courses).	N/A
2.3.7.6	FEPA sub-catchments, including- (a) the impacts of the proposed development on habitat condition and species in the FEPA sub-catchment.	N/A
2.3.7.7	Indigenous forests, including: (a) impact on the ecological integrity of the forest; and (b) percentage of natural or near natural indigenous forest area lost and a statement on the implications in relation to the remaining areas.	N/A
2.4	The findings of the assessment must be written up in a Terrestrial Biodiversity Specialist Assessment Report.	Noted.
3	**Terrestrial Biodiversity Specialist Assessment Report**	
3.1	The Terrestrial Biodiversity Specialist Assessment Report must contain, as a minimum, the following information:	
3.1.1	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Appendix B
3.1.2	A signed statement of independence by the specialist;	Page i and Page ii
3.1.3	A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 3.2

3.1.4	A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Section 3.1 and Section 3.2
3.1.5	A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;	Section 4
3.1.6	A location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	Section 8
3.1.7	Additional environmental impacts expected from the proposed development;	Section 9
3.1.8	Any direct, indirect and cumulative impacts of the proposed development;	Section 9
3.1.9	The degree to which impacts and risks can be mitigated;	Section 9
3.1.10	The degree to which the impacts and risks can be reversed;	Section 9
3.1.11	The degree to which the impacts and risks can cause loss of irreplaceable resources;	Section 9
3.1.12	Proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	Section 9
3.1.13	A motivation must be provided if there were development footprints identified as per paragraph 2.3.6 above that were identified as having a "low" terrestrial biodiversity sensitivity and that were not considered appropriate;	N/A
3.1.14	A substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and	Section 10
3.1.15	Any conditions to which this statement is subjected.	Section 9.4
3.2	The findings of the Terrestrial Biodiversity Specialist Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which must be incorporated into the EMPr where relevant.	Noted.
3.3	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	Noted.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

BP Environmental Solutions were appointed by Mondli Consulting Services, on behalf of Mageza Country Estate to conduct a Terrestrial Ecological Impact Assessment as part of the environmental process for the Proposed Mageza Mall Project, in KwaZulu-Natal.

The proposed site is approximately 16 865m2 in extent and the development will expand on the nearby Sasol Petrol Filling Station to include increased parking, toilet facilities, a drive-through takeaway and a dedicated waste storage area among other mixed use buildings (hardware shop, Kiosk etc.) to attract a wide variety of patrons to the facility.

According to the KwaZulu-Natal Biodiversity Plan (EKZN, 2014) the proposed development does not occur within a Critical Biodiversity Area (CBA). Nationally the site is located however, within a "Threatened Ecosystem" as listed within the National Management Biodiversity Act (Act 10 of 2004), namely the Ngongoni Veld (SVs 4) which is has been assigned a "Vulnerable" conservation status. As no primary vegetation was observed within the study area, impacts to this ecosystem will be regarded as limited, provided that all mitigation technique listed within this report are adequately implemented. It was the specialist however, that losses of natural vegetation similar to that of the benchmark vegetation type associated with the site (Dry Coast Hinterland Grassland – Gs 19) will be unavoidable and approximately 1.5 hectares of indigenous vegetation will be cleared in order to establish the proposed mall.

The desktop assessment revealed that no formally protected areas were found within the boundaries of the site, nor will the proposed development impact on the protected areas expansion programme. However, according to the Protected Areas Register (PAR, 2020) there are three (3) formally protected areas which occur within ten (10) of the site, but are likely to not be impacted upon by the proposed development.

During the field assessment conducted on the 13th of March 2021, only one (1) protected plant species (in terms of the KZN Provincial Conservation Ordinance (PCO) namely Aloe Pruinosa. It has been recommended that a pre-construction walk-through is conducted to ensure that an accurate account of the location and frequency of this species is kept and used when apply for a permit from Ezemvelo KZN Wildlife.

No faunal species of any particular conservation importance were observed during the site walk-through, but during the desktop assessment several SCC have been recorded within the area and must be considered when constructing and operating the proposed facility. A summary of these species have been provided below:

Scientific Name	***Conservation Status (IUCN)***	***Likelihood of Occurrence (Low, Medium, High)***
Avifauna		
Gyps coprotheres	*EN*	*Low*

Stephanoaetus coronatus	*NT*	*Low*
Balearica regulorum	*EN*	*Low*
Geronticus calvus	*VU*	*Low*
Herpetofauna		
Bradypodion melanocephalum	*NT*	*Low-medium*
Bradypodion thamnobates	*EN*	*Low*
Natalobatrachus bonebergi	*EN*	*Low*
Mammalia		
Aonyx capensis	*NT*	*Low*
Chrysospalax villosus	*VU*	*Low-Medium*
Miniopterus schreibersii	*VU*	*Low*
Myosorex cafer	*VU*	*Low*
Mystromys albicaudatus	*VU*	*Medium*
Otomys auratus	*NT*	*Low*
Panthera pardus	*VU*	*Low*

According to the latest national dataset for freshwater resources (SANBI, 2018), the proposed development occurs within a portion of a "seep" wetland (more than 40% of the development footprint) and within 500m of one (1) NFEPA river and two (2) additional wetlands. Although the delineation of wetlands was not a part of this assessment no visual evidence was recorded which demonstrated that any wetland ecosystem occurs within the study area. However, it was confirmed that wetland habitat exists just outside of the site boundary and as such a 30 m protective buffer has been applied around this system to ensure the maintenance of its ecological function and stability.

The proposed development assessed within this report occurs within all three sensitivity classes (Low, Medium and High) with most of the proposed development occurring within areas considered to have low and medium sensitivities. It has been recommended by the specialist that all highly sensitive areas are avoided, and are included in the proposed layout plan as a no-development ecotone (30m wetland buffer) and as much low sensitivity areas are used when confirming the development plan. The impact assessment revealed that the proposed development result in a medium to low impact after mitigation and assuming that all of the recommendation listed within this report are strictly implemented by the Developer.

Based on the outcome of the assessment, there were no evident fatal flaws that would prevent this development from being authorised and therefore it was the specialist's opinion that the development receives a positive decision in terms of the development being authorised.

1. INTRODUCTION

1.1 Background to Project

BP Environmental Solutions has been appointed by Mondli Consulting Services, on behalf of Mageza Country Estate to conduct a terrestrial ecological impact assessment as part of the initial environmental process required for the proposed Mageza Mall.

The proposed project is located between Archie Gumede Drive and Driftside Road in the Masons Mill suburb of Pietermaritzburg, KwaZulu-Natal. The site is located within Quarter Degree Square 2930CB. The proposed site is approximately 16 865m^2 in extent and the development will expand on the nearby Sasol Petrol Filling Station to include increased parking, toilet facilities, a drive-through takeaway and a dedicated waste storage area among other mixed use buildings (hardware shop, Kiosk etc.).

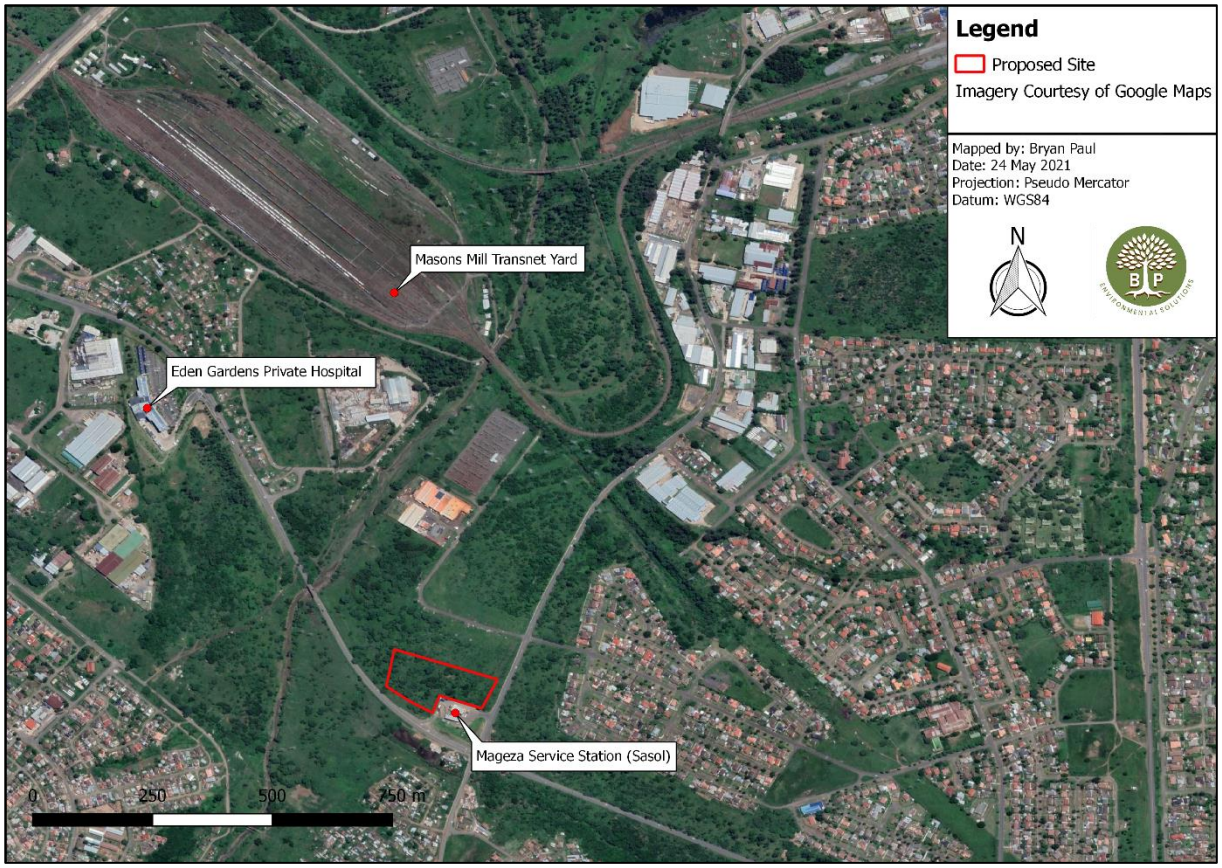

Figure 1: Locality map of the Proposed Development

As illustrated in the figure above (Figure 1), the site consists of an area which is undeveloped and currently acts as open natural corridor between two (2) residential areas and an industrial zone in the west. The proposed development will entail the clearing of the entire site of all vegetation, and the establishment of a secure mixed use development adjacent to the existing petrol station.

2. OBJECTIVES OF THIS ASSESSMENT

The ecological impact assessment report was undertaken to:

- Determine threatened species and species of conservation concern at a regional and national scale.
- Determine conservation priory areas according to authorised Critical Biodiversity Areas (CBAs).
- Identify and record Species of Conservation Concern (SCC) in terms of the National Red List Status. (SANBI, 2012) and Red Data List (IUCN, 2020) specifying species that are either: rare, threatened, endangered, or critically endangered.
- Identify areas/habitats that will be significantly impacted upon (ecological footprint) by the proposed development with a description of the manner in which they will be impacted upon, including the direct, indirect and cumulative impacts.
- Identify and assess the potential impacts associated with a proposed development.
- Determine, according to professional judgement, the likelihood of occurrence, nature, magnitude, extent and duration of potentially significant impacts.
- Recommend mitigation measures to minimise or eliminate potential negative impacts and enhance potential positive impacts.
- Provide a revised significance rating of assessed impacts after the implementation of mitigation measures.

3. METHODOLOGY

This terrestrial biodiversity impact assessment has been undertaken in line within the “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) and 44 of the National Environmental Management Act (NEMA; Act No 107 of 1998) when Applying for Environmental Authorisation, dated 2020 March 2020”. The Protocol for the specialist assessment and impacts on terrestrial biodiversity applies.

3.1 Desktop Assessment

Available desktop information was assessed to best contextualize the site, and several databases and mapping tools were used. The following is a summary of the desktop information sources used:

- Google Earth imagery was used to determine the current land cover and existing land uses.
- Conservation Planning Tools such as the “List of Ecosystems that are Threatened and in Need of Protection”, Wetlands dataset (NFEPA) and the KwaZulu-Natal Biodiversity Pan were mapped for the study area.
- A list of possible Species of Conservation Concern (SCC) was provided by the POSA list of plant species recorded in the Ogunjini Area which is checked again both international, national and provincial lists of SCC species and/ or protected species:

  - The National Red Data List for Amphibians;
  - The National Red Data List for Mammals;
  - The National Red Data List for Avifauna;
  - The Provincial Protected Plant Species List (Nature Conservation Ordinance No. 15 of 1974;
  - National Protected Tree List (Government Gazette Vol. 593, 21 November 2014, No. 38215); and
  - The National Protected Species List or TOPS (R 1187 of 2007).
- The National Vegetation Map developed by Mucina and Rutherford (2018) was consulted to determine the expected vegetation type.
- National Biodiversity Assessment (NBA, 2018) which provides a threat status as well as protection level for the vegetation occurring within the project area (Skowno et al. 2019).
- The South African Protected Areas Database (SAPAD, 2020) and South African Conservation Areas Database (SACAD, 2020).
- The National Protected Area Expansion Strategy (NPAES, 2010).

3.2 Ecological Survey

A walkover field survey was conducted on the 13th of May 2021. This assessment was used to verify the presence or absence of species predicted to occur on the site and record any habitat which may occur within the study area. The assessment has been carried out outside of the recommendations made by Ezemvelo KZN Wildlife (EKZNW) with regards to the timing of the season, however as there has been significant rainfall experienced during this season, coupled with the recommendation that a follow-up walkthrough is conducted prior to construction, this should not be considered a limitation in this assessment.

The site was first surveyed at a desktop level, using Google Earth imagery and then divided into areas of specific vegetation communities as per stratified random sampling methodology. Each these vegetation communities were assessed during the field assessment. For sampling of flora and fauna, timed meanders were used until no new species were recorded within each community as guided by rapid assessment best practise. As all areas of the study area was accessible, no access related limitations were recorded.

For the purposes of this study, faunal data collected during the field assessment makes use of opportunistic sightings as well as evidence of faunal activity (where applicable):

- Spoor (tracks);
- Dung;
- Burrows; and
- Alarm and/or breeding calls.

All observed natural habitats were also recorded and used to assess the suitability of the site for species which may not have been observed during the ecological survey. No live-data monitoring was used such as camera-

traps, drift net arrays and Sherman traps as this area was not considered to be safe for any equipment to be left on site, or due to the risk of injuring local livestock which frequently graze in this area.

3.3 Ecological Impact ratings

The objective of impact assessments is to identify and assess all impacts that may potentially arise as a result of undertaking activities associated with the proposed development. The significance of potential impacts will guide local authorities on whether the activity should commence i.e. be authorised, whether it will be subject to the mitigation measures implemented or if it will be denied given the large irreversible potential impact it will have on the environment.

The impact assessment methodology outlined within the EIA Regulations, Chapter 3 (I and j) of the NEMA 1998 (No. 107 of 1998, as amended) have been used within this report to assess the anticipated impacts of the proposed development.

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

The significance is determined through a synthesis of the characteristics described above. The significance weightings for each potential impact are outlined in the table below (Table 1), with the greatest significant value of 100.

Table 1: Significance weighting, values and description of each arrived significance score.

SIGNIFICANCE VALUE	SIGNIFICANCE WEIGHTING	DESCRIPTION
< 30	**Low**	This impact has a Low ecological significance, and does not impact on the decision to develop within the area
30-60	**Medium**	Where the impact could influence the decision to develop in the area unless it is effectively mitigated
>60 - 100	**High**	Where the impact must have an influence on the decision process to develop in the area

Table 2: Criteria used in deriving significant impacts rating (DEA, 2014)

Component	Definition and Scoring System	
Magnitude	**The intensity or size of the impact:**	
	Small: No visual effects.	0
	Minor: Impact on processes.	2
	Low: Minimal effect on ecological processes	4
	Medium/Moderate: The environment is altered but is able to perform ecological processes in a modified state, despite being negatively affected.	6

	High: The ecological processes are altered such that they cease due to drastic changes to the structure and function of systems.	8
	Very high: The ecological processes severely altered and complete destruction of patterns and permanent cessation of processes.	10
Duration	**The temporal scale / predicted lifetime of the impact:**	
	Very short term: 0 - 1 years.	1
	Short term: 2 - 5 years.	2
	Medium term: 5 -15 years.	3
	Long term: > 15 years.	4
	Permanent: Will persist indefinitely unless mitigated.	5
Extent	**Spatial scale of the impact**	
	Specific to site of impact.	1
	Local scale: Immediate surroundings.	2
	Regional scale: Province related scale.	3
	National: Specific to country.	4
	International: World wide/global.	5
Probability	**The likelihood of the impact occurring:**	
	Very improbable: Possibility that will likely never occur.	1
	Improbable: Some low possibility of occurrence.	2
	Probable: Distinct possibility.	3
	Highly probable: Most likely to occur.	4
	Definite: Impact will occur regardless of any prevention measures.	5

3.4 Ecological Sensitivity Classes

Vegetation has been used as a common biological indicator to identify the Present Ecological State (PES) or ecological health of ecosystems, given their overall ability to respond rapidly to disturbance. Conservative plant species are the most commonly affected species given their high conservatism status, high sensitivity, narrow distribution ranges and low tolerance to disturbance, these species are the first to be eradicated in disturbed conditions (Rocchio, 2007). As such, areas that are highly disturbed will more than likely have non-conservative species that are not sensitive, have higher tolerance to disturbances and have broad distribution ranges (Rocchio, 2007). The following sensitivity classes (Table 3 below) were applied to the study area and indicates the likely sensitivity of the area.

Table 3: Description of the sensitivity classes applied to the study area

CLASS	CRITERIA
Low sensitivity	Areas included in this sensitivity class which are expected to consist of habitats which are already transformed or degraded and have reduced ecological function. Areas included in this class are often found to not be unique, have a moderate to high abundance of Alien Invasive Plant Species or consist

	of species which have a high tolerance for change. No Species of Conservation Concern (SCC) were found in this area at the time of the field assessment.
Moderate Sensitivity	Areas that have disturbed natural and secondary indigenous vegetation. Areas which demonstrate a moderate level of tolerance to disturbances and it is expected that the fauna occurring within these areas have a wider preference for habitat and are not endemic to this specific location. Areas which demonstrate a moderate ecological function, and would represent areas which act more like ecological through-routes between more important environmental features or habitat (e.g. breeding grounds and significant foraging areas. Habitat included in this class are not unique and is repeated nearby. Areas which are located within this class did not contain Species of Conservation Concern (SCC) at the time of the field assessment.
High Sensitivity	Areas that are known to contain the presence of protected and/or threatened species (Critically Endangered, Endangered and Vulnerable), or vegetation types which demonstrate primary vegetation and are provincially protected, or uniquely composed habitats or have a low ability to respond to disturbance. Areas included in this class demonstrate a unique species composition and narrow distribution for the area and/ or areas which demonstrate important ecological features (watercourses, forests etc.) and which must be protected.

4. ASSUMPTIONS AND LIMITATIONS

- The assessment was conducted outside of the recommended season for conducting terrestrial ecology assessments. Seasonal variations may pose a limit to certain, more cryptic and rare species that may be found within the study area. It must be noted however, that above normal rainfall has been experienced this year and therefore would reduce the limitations of the timing and season of fieldwork. It has been assumed that the Applicant / Developer will commission the services of a botanist to conduct a follow-up assessment (preferably between November and February) prior to the construction of the proposed development.
- At the time of the field survey evidence of vegetation clearing was observed on the adjacent property. It is likely that the clearance of vegetation just outside of the study area would have had an impact on the existing faunal communities observed at the time of the assessment.
- The vegetation units identified on a desktop level will differ to those observed and identified in the field, this is attributed to land transformation and due to the scale of the vector data utilised when mapping.
- Plant species display a range of morphological and physiological attributes that determine their growth, reproduction and survival. It is therefore unlikely that all plant species identified on site will remain the same over temporal and spatial scales.
- No method statements were provided to the specialist describing the exact nature of the proposed activities occurring within each section of the site.
- An accurate delineation of the surrounding watercourses was not a part of the specialist's scope, but all nearby potential watercourses have been noted for their ecological significance.

- Evaluation of the significance of impacts with mitigation takes into account mitigation measures provided in this report and standard mitigation measures included in the project-specific Environmental Management Programme (EMPr).
- To accurately record the species on site, long-term field assessments would have to be conducted to consider seasonal and temporal variations and provide more accuracy. This assessment however, is considered appropriate for the scale and nature of the proposed development.
- No live data monitoring (camera-traps, Pitfalls etc.) was used as a result of timing and risk (mainly due to theft and anthropogenic disturbance to traps) and therefore this assessment relies on local knowledge and existing databases and available information.

5. APPLICABLE LEGISLATION AND POLICIES

The study was undertaken in accordance with the guidelines provided in the Guidelines Document: EIA Regulations (DEAT, 1998) and the NEMA principles in addition to the legislation provided in Table 4 to provide a holistic framework to guide decision-making on future developments, ensuring the protection and conservation of threatened ecosystems, whilst taking into account the interconnectedness of society and the environment. The following legislation, outlined in Table 4 below, has been deemed applicable to the proposed development.

Table 4: Legislation deemed applicable to the proposed development.

Legislation	Definition
KwaZulu-Natal Nature Conservation Management Amendment Act, 1999 (KZN CMAA; Act No. 5 of 1999).	This act amends the KwaZulu-Natal Nature Conservation Management Act in a wide variety of matters relating to the establishment and powers and functions of the KwaZulu-Natal Nature Conservation Board, the organization of the KwaZulu-Natal Conservation Services, powers of honorary officers, protected area and other aspects such as hunting.
Conservation of Agricultural Resources Act (CARA; Act No. 43 of 1983)	This act provides a legal framework to control the utilization of natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants, and for matters connected therewith.
National Environmental Management: Protected Areas Act (NEMPAA; Act No. 57 of 2003)	This act provides a list of the protected areas which may fall on, or within close proximity to the proposed development site.
Threatened or Protected Species Regulations (2015)	These regulations, made under the National Environmental Management Biodiversity Act, 2004, provide for the protection and conservation of threatened species (including marine plants and animals).

National Environmental Management Biodiversity Act (NEM:BA) (No. 10 of 2004 as amended) (DEA, 2004)	This Act seeks to manage and conserve biodiversity within the framework of the National Environmental Management Act, 1998. The developer has a responsibility for limiting the loss of biodiversity and ecosystems by adhering to the following legislation and restricted activities. The following legislation may be consulted throughout the various phases of the proposed development: • GNR 324 of Government Gazette No. 37596 of 2014 provides the Amendment to the Threatened or Protected Species Regulations. • GNR 1002 of Government Gazette No. 34809 of 2011, provides a national list of terrestrial ecosystems that are threatened and in need of protection. • GNR 151 of Government Gazette No. 29657 of 2007 and GNR 1187 in Government Gazette 30568 of 2007 provides a list of critically endangered, endangered, vulnerable and protected species. • GNR 988 of Government Gazette No. 41919 of 2018 provides amendments to the alien and invasive species list as well as the critically endangered, endangered, vulnerable and protected species. • GNR 599 of Government Gazette No. 37886 of 2014 and GNR 864 of Government Gazette No. 40166 of 2016 provides a list of invasive and alien plant species • GNR 598 of Government Gazette No. 37885 of 2014 provides the Alien and Invasive Species Regulations. GNR 112 of Government Gazzette No. 41445 of 2018 provides the draft alien and invasive species regulations in terms of categories, potential eradication and control techniques and the requirements for the application of permits. • GNR 529 of Government Gazette No. 40889 of 2017 provides the most updated amendments to the Regulations on the Convention of International Trade in Endangered Species (CITES) of wild fauna and flora. • Section 76 of the NEM:BA (No. 10 of 2004) provides guidelines for monitoring, control and eradication plans for species listed as invasive in terms of Section 70 of this Act.
National Forests Act (NFA) (No. 84 of 1998) (DAFF, 1998)	Section 15(1) of the NFA: No person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated. Contravention of this declaration is regarded as a first category offence that may result in a person who is found guilty being sentenced to a fine or imprisonment for a period up to three years, or to both a fine and imprisonment.
KwaZulu-Natal Nature Conservation Ordinance No. 15 of 1974	This is the relevant statute in KwaZulu-Natal, which aims to manage the removal and destruction of rare and endangered species. Whilst this ordinance is in need of an update, it provides specialists with a basic tool to highlight both protected and specifically protected species which will require permits to relocate.

6. DESKTOP ASSESSMENT

6.1 National and Provincial Conservation Planning

Ezemvelo KZN Wildlife's Systematic Conservation Assessment (SCA) identifies area that varies in terms of conservation importance as identified and mapped under the KwaZulu-Natal (KZN) biodiversity spatial planning terms and processes (EKZNW, 2016). According to this assessment, areas within KZN are subdivided into Planning Units (PUs) of varying spatial scales each associated with biodiversity features (e.g. vegetation types, ecosystems and species of conservation importance etc.). The SCA classifies area of biodiversity value/ importance using two main categories, namely Critical Biodiversity Area's (CBA's) and Ecological Support Areas (ESA's). CBAs comprise of two subcategories, as described by EKZNW (2016), namely CBA: Irreplaceable and CBA: Optimal. ESA's other hand are not subdivided, but represent areas that support and sustain the ecological functioning of the CBAs thereby ensuring the persistence and maintenance of biodiversity patterns and ecological processes.

***Table 5: Description of the CBA categories which have been used within this report*.**

Critical Biodiversity Area Category	Critical Biodiversity Area Category Explanation
CBA: Irreplaceable	Represent the only localities where conservation targets for specific biodiversity features can be met under the current conservation planning scenario. From a conservation perspective, these areas are considered "irreplaceable" in terms of maintaining biodiversity targets and should ideally be avoided.
CBA: Optimal	Represent the best localities that provide critical linkages for CBA: Irreplaceable areas.
Natural Biodiversity Areas	All natural areas not already included in the above categories.
Modified	Areas with no significant natural vegetation remaining and therefore regarded as having a low biodiversity value (e.g. areas under cultivation).
Ecological Support Areas (ESAs)	These areas represent portions of the study area which are functional, but are not necessarily regarded as areas which are naturally intact. They are however required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within Critical Biodiversity Areas.
Ecological Support Areas: Species Specific	Terrestrial modified areas that provide a critical support function to a threatened or protected species, for example agricultural land or dams associated with nesting / roosting sites.
Ecological Support Areas: Buffers	Terrestrial areas identified as requiring land-use management guidance not necessarily due to biodiversity prioritisation, but in order to address other legislation/ agreements which the biodiversity sector is mandated to address.

According to Figure 2 below, the proposed development is not associated with any Critical Biodiversity Area (CBA) categories (EKZN, 2016). It is however evident that a small patch exists outside of the development footprint near the entrance of the existing petrol station. This finding is likely to be of little consequence, as the area in question contains no natural habitat and has is occupied completely by parking and a portion of filling stations kiosk. There

are therefore no potential changes or impacts to surrounding CBAs. According to the National Screening Tool generate by the specialist, the proposed site was classified to have the following sensitivities:

Table 6: Summary of the environmental sensitivities listed within the National Screening Tool Report (DFFE, 2021)

Theme	Sensitivity Rating	Feature (s)
Plant Species Theme	Medium	*Eriosema populifolium subsp. populifolium*
		Dierama pallidum
		Hermannia sandersonii
		Hydrostachys polymorpha
		Sensitive species 461
		Woodia verruculosa
		Senecio exuberans
		Cineraria atriplicifolia
		Helichrysum pannosum
		Sensitive species 1260
		Sensitive species 1076
		Sensitive species 1251
		Sensitive species 535
		Sensitive species 277
		Sensitive species 313
		Disperis woodii
		Senecio dregeanus
		Gerbera aurantiaca
		Sensitive species 649
		Sensitive species 944
		Thunbergia venosa
		Sensitive species 191
Terrestrial Biodiversity	Very High	Critical Biodiversity Area (located outside of the proposed development footprint (according to the 2014 KwaZulu-Natal Biodiversity Sector Plan (EZKNW, 2014).
		Vulnerable ecosystem (Ngongoni Veld – SVs 4)
		Sensitive species 9

In terms of the Best Practise Reporting guidelines, species listed above which have been referred to as “sensitive species with their unique identifies” have been excluded from this report. The names have been withheld as these species may be prone to illegal harvesting and must be protected. The Species request the names of these species from SANBI, via the EIA Data Request platform and has confirmed their presence or absence on site. The outcome of this assessment is contained under the floral and faunal sections found below.

Further analysis of Figure 2 below reveals that three (3) NFEPA wetlands, and one (1) NFEPA river exists within a 500m radius of the proposed study area. Of the four (4) watercourses, it has been confirmed at a desktop level that the proposed development is likely to directly impact upon a NFEPA wetland, where more than 40% of the development footprint has been positioned within this ecosystem. This wetland is regarded as a "seep" wetland and is not protected according to the Wetland 5 (SANBI, 2018) dataset. Although the delineation of nearby watercourses was not a part of the specialist's scope, no indications of a wetland system were found during the field assessment, and it was the opinion of the specialist that based on the vegetation communities, the habitat remains terrestrial until just outside of the developmental boundary in the north-westerly direction. A Freshwater Habitat Specialist therefore, is required to delineate and assessment the impact of the proposed development on any surrounding freshwater ecosystems.

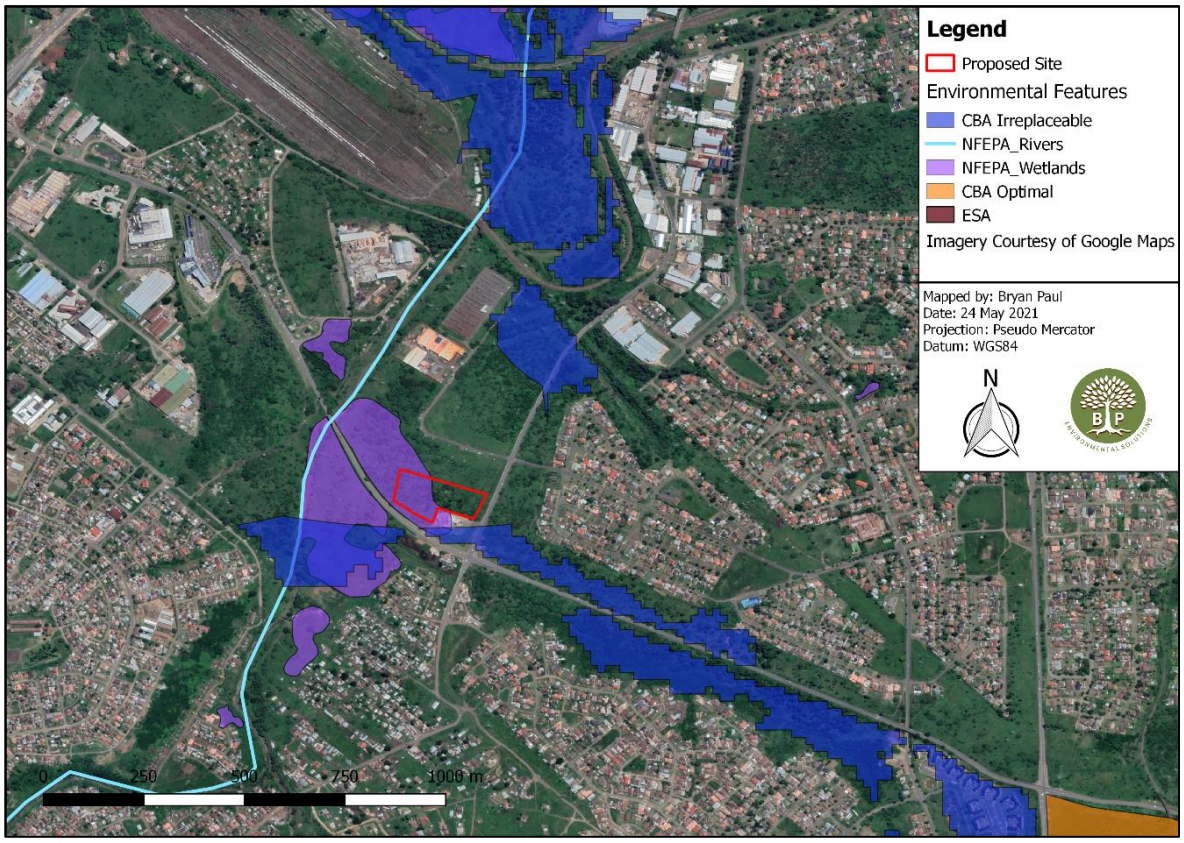

Figure 2: Illustration of applicable areas of conservation importance found within the proposed site and nationally protected freshwater habitat

According to the Protected Areas Register (PAR, 2020), maintained by the Department of Forest, Fisheries and the Environment (DFFE) in terms of the National Management: Protected Areas Act (Act 57 of 2003), the South African Protected Areas Database (SAPAD, 2020), and the South African Conservation Areas Database (SACAD, 2020) no formally protected areas occur within the proposed study area. However, the study area is located within ten (10) kilometres of three (3) formally protected areas, namely the Doreen Clark Nature Reserve (9.99 km), Queen Elizabeth Park Nature Reserve (9.76 km) and the Mpushini Protected Environment (9.50 km). No existing formal "Ecological Corridors" exist between any of these protected reserves and therefore it is high unlikely that a development of this nature will result in notable impacts to these reserves or any conservation objective connected

thereto. Additionally, the latest database of Important Bird and Biodiversity Areas (IBBAs) revealed that the site is not located on, or within close proximity to a registered IBBAs and therefore will not be discussed further.

The National Environmental Management: Biodiversity Act (Act 10 of 2004) lists Threatened or Protected Ecosystems, in one of four categories:

- Critically Endangered (CR);
- Endangered (EN);
- Vulnerable (VU); or
- Protected.

The main purpose of listing Threatened ecosystems is to reduce the rate of ecosystem and species extinction and includes the prevention of further degradation and loss of structure, function and composition of Threatened Ecosystems.

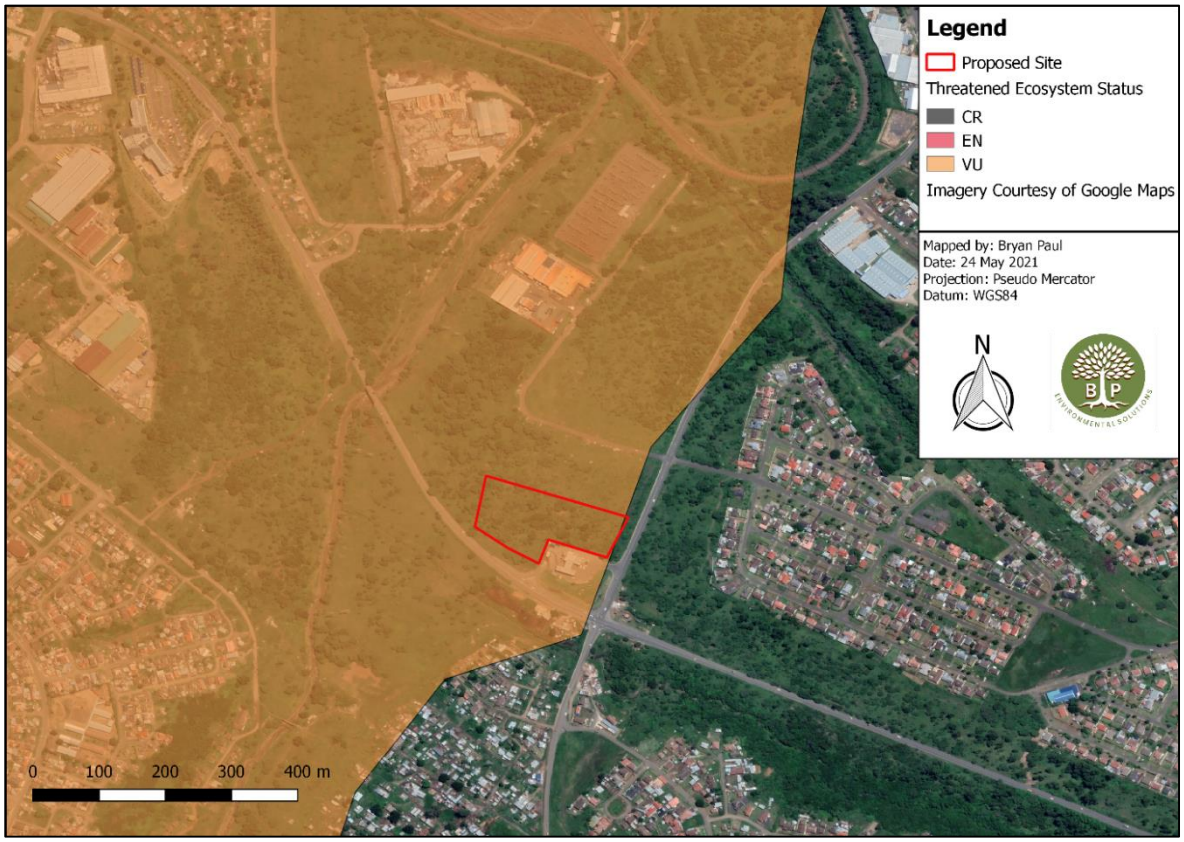

Figure 3: Illustration of the Threatened Ecosystem Status associated with the proposed study area

According to the "Schedule of Threatened Terrestrial Ecosystems in South Africa" (promulgated under NEMBA, Government Notice 1002 of 2011), and Figure 4 above, the proposed development occurs within one (1) Threatened Ecosystems which is classified as Vulnerable (Ngongoni Veld – SVs 4). No primary vegetation was observed on site at the time of the field assessment and therefore it is unlikely that the proposed development will have any impact to the conservation goals listed for this threatened ecosystem.

6.2 Vegetation Types

Plant species are often affiliated to specific habitats based on their morphological and physiological traits (Coles-Ritchie et al., 2007). Hence, spatial and temporal variability of habitats is often represented in changes to vegetation. The National Vegetation Map of South Africa (VEGMAP), developed by Mucina and Rutherford (2018), is a geographical classification of plant communities across South Africa that is constantly updated to keep record of changes to the boundaries of vegetation units and their threat status, which is often determined by land use.

According to Figure 7 below, the study area is only associated with one (1) vegetation types, namely Dry Coast Hinterland Grassland (Gs 19). According to Mucina and Rutherford (2006) this vegetation type has been combined with another, namely Moist Coast Hinterland Grassland to form the Ngongoni Veld (SVs 4) which has been classified as "Vulnerable". As this vegetation type belongs to the grassland biome of South Africa, areas included in this vegetation type are often associated with low floral diversity, dominated by unpalatable grassland species such as *Aristida juciformis*. Wooded areas are often associated with valleys at lower altitudes, where termintaria support bush clumps consisting of *Vachellia spp., Cussonia spicata, Ziziphus mucronata, Coddia rudis* and *Ehretia rigida* (Mucina & Rutherford, 2006).

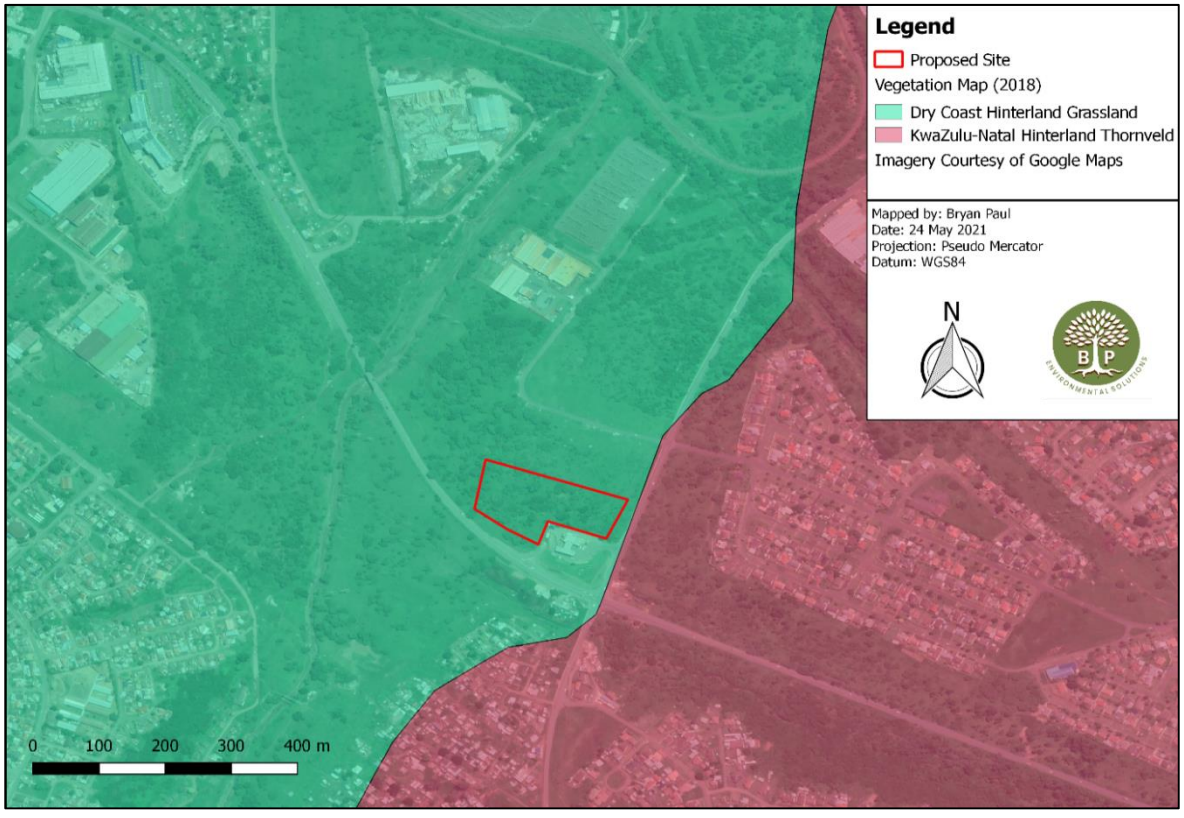

Figure 4: Vegetation types associated with the study area (Mucina and Rutherford, 2018)

According to the finer scale KwaZulu-Natal vegetation dataset devised by Scott-shaw & Escott (2011), the proposed site is found within (2) vegetation additional vegetation types namely, Alluvial Wetlands and Dry Coast Hinterland Grasslands (Figure 5 below).

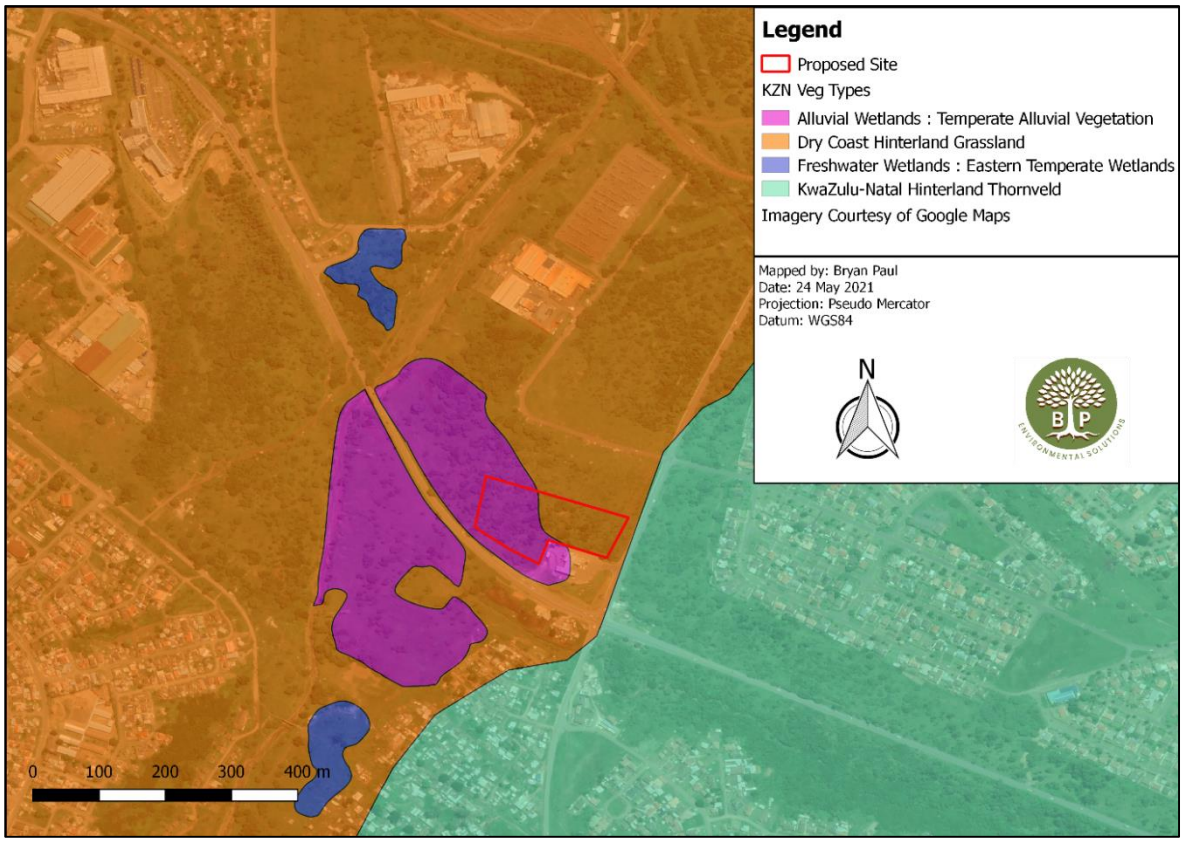

Figure 5: KZN Vegetation types associated with the study area (Scott-shaw & Escott, 2011)

6.3 Physical Environment

6.3.1 *Climate*

The area in which the site is set (Pietermaritzburg) is located 631m above sea level, and its climate is classified as warm and temperate. Rainfall commonly occurs throughout the year, but specifically in the summer months. According to the Köppen-Geiger climate classification system, the site has been classified under Cfb. Yearly temperatures can fluctuate on average between 5 degrees Celsius in winter and 29 degrees Celsius during the hotter months.

6.3.2 *Geology and Soils*

The role of geology (including soils) in the development of the characteristics of landscapes and the presence and distribution of organisms, specifically vegetation has been researched by ecologists for a hundred years (Wetherell, 2004). Certain associations between rock types and flora can be made, and indirectly the presence of fauna which have certain affinities for said vegetation, or habitats such as scarp forests or grasslands. The proposed site is found predominantly in the Pietermaritzburg Formation of the Ecca Group of the Karoo Supergroup, which is characterised by having dark grey shale, siltstone and subordinate sandstone. Soils in this region may have favourable physical properties or high natural fertility (Sanbi, 2011).

6.3.3 *Topography*

The topography of a region is a critical characteristic when considering the species diversity and variation in available habitat present within the study area. The proposed site is located within a fairly homogenous topography with no real landscape features. The site slope gradually from east to west and levels our into wetland system just outside of the proposed site boundary. It likely that portions of natural landscape have been altered over the years through backfilling and major earthworks required to construct the Archie Gumede Dr road and when constructing the petrol filling station nearby.

6.3.4 *Land Cover (DEA, 2014)*

According to the Department of Environmental Affairs Land Cover Dataset (DEA, 2014), the site contains four (4) main land cover categories, namely Grassland, Woodland, Thicket and Wetlands in the west. As it became apparent during the site visit, the grassland which may have occupied a vast majority of the site has now been largely colonised by a woody plant community, with open and dense thicket providing most of remaining habitat, with small patches of remnant of grassland between.

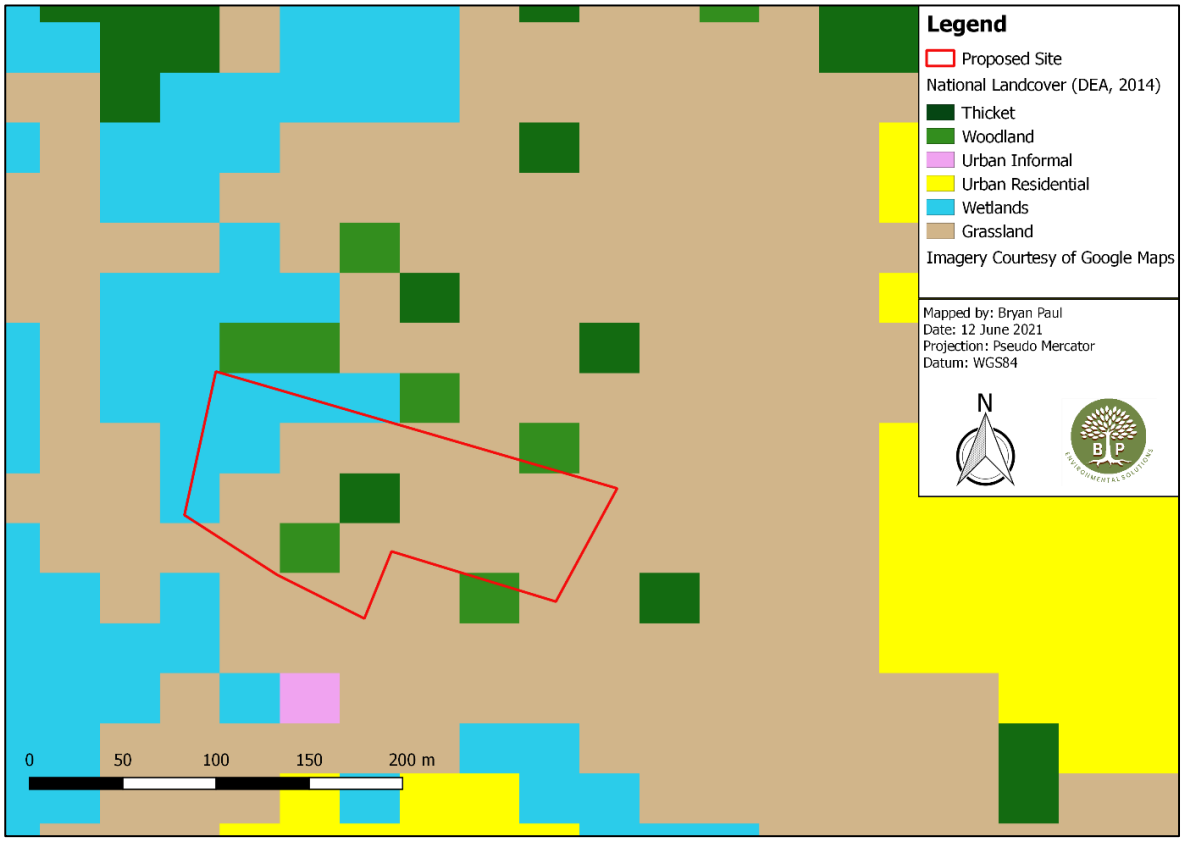

Figure 6: National Landcover Map of the proposed development area (DEA, 2014)

6.3.5 *Hydrology*

As illustrated in Figure 2 above, the proposed site positioned with area of high hydrological importance. Whilst no evidence was found that any aquatic ecosystems exist within the proposed footprint, a major river and small stream

cut through the landscape. Furthermore, wetland habitat was noted just outside of the study area which may be the historic reminisce of a much larger system which has since been cut off infilling and creation of roads. Although not considered a significant wetland which requires protection (according to the Wetland 5 Maps compiled by SANBI in 2018), this area was at the centre of much faunal activity (avifauna, amphibians etc.) and must be preserved.

7. RESULTS OF THE SITE INVESTIGATION

The findings of this study are based on the fieldwork conducted by Bryan Paul on 13th of May 2021, where the entire site was traversed by foot. Specialist acknowledges that the assessment falls outside of the recommended time and season for conducting fieldwork (Ezemvelo KZN Wildlife guidelines), however there has been a significant amount of rainfall experienced during this season and therefore this limitation may be overcome with a follow up site walkthrough conducted prior to construction.

7.1 Habitat Analysis

Nationally the site has been included in one (1) vegetation type, namely the Dry Hinterland Grassland (Gs 19). The field assessment revealed that at a finer level, three plant communities existing within the study area, namely Thicket, Secondary Grassland and Degraded Secondary Grassland which are expected to occur within this region. Figure 7 below illustrates the specialist's best depiction of the current land cover.

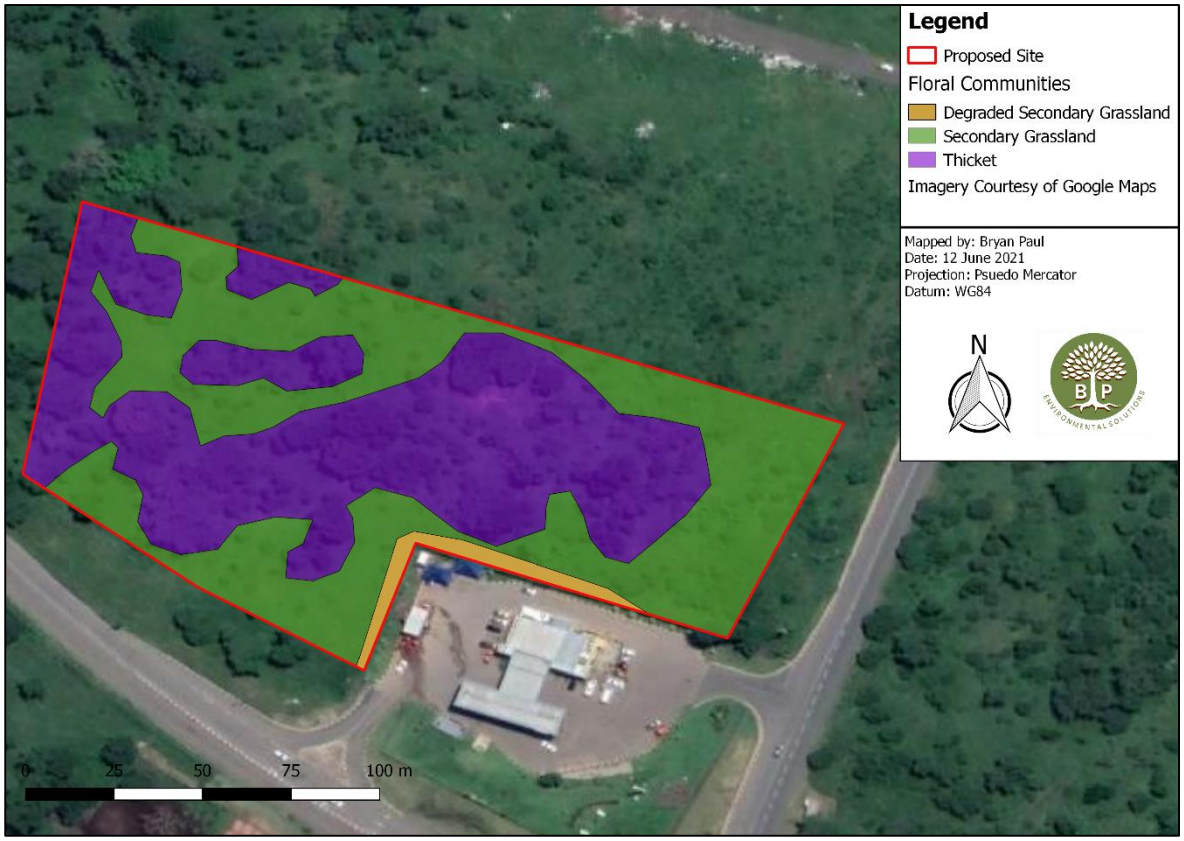

Figure 7: Land Cover map of the existing plant communities found within the study area.

7.1.1 Thicket

This vegetation type represents a collection of woody plant species which have presumably encroached into a grassland area. The species composition aligns with what is expected within this vegetation type and occupies approximately one (1) hectare. The thicket community appears to become denser and more developed when moving towards the western portion of the property and towards the wetland habitat. It is expected that the soil profile here supports more vigorous growth, and encourages larger tree species like *Vachellia sieberiana var. woodii* to occur. This portion of the property provides good variation in habitat for bird species and other fauna in the more shaded under-canopy, as it was apparent during the field assessment. Thicket habitat towards the east becomes less dense and opens up toward a plant community which is more representative of a grassland with the abundance of graminoid species and smaller trees *Dichrostachys cinerea* and *Ziziphus mucronata subsp. Mucronata*

Figure 8: Snapshots of the Thicket communities occurring within the study area.

Exotic / Invasive Species Common within this community

- *Chromolaena odorata* (Triffid Weed)
- *Ipomoea indica* (Morning Glory);
- *Lantana camara* (Lantanta);
- *Ricinus communis* (Castor-oil Plant);
- *Solanum mauritianum* (Bug Weed); and
- *Tecoma stans* (Yellow bells).

Indigenous Species Commonly Associated with this community

- Dichrostachys cinerea (Sickle Bush);
- Digitaria eriantha (Common Finger Grass);
- Erythrina lystistemon (Common Coral Tree);
- Setaria sphacelata var. sericea (Golden Bristle Grass);
- Vachellia *nilotica subsp. Kraussiana* (Scented-pod Acacia);

- Vachellia sieberiana var. woodii (Paperbark Thorn); and
- *Ziziphus mucronata subsp. Mucronata (Buffalo Thorn).*

7.1.2 Degraded Secondary Grassland

Degraded secondary grasslands represents the smallest land cover, with approximately 0.05 hectares that will be impacted upon by the proposed development. As demonstrated in Figure 9 below, this community is dominated by Alien Invasive Plant Species (AIPS) like *Senna didymobotrya (Peanut butter cassia)* with limited to no natural vegetation remaining. Past, and existing anthropogenic disturbances like earthmoving, clearing of vegetation, limited / to no AIPS control and littering has subjected this community to a higher level of stressors and plant species composition is representative of a community tolerate and thrive in a disturbed environment.

Figure 9: Snapshots of the Degraded Secondary Grassland communities occurring outside the boundary fence of the petrol filling station.

Exotic / Invasive Species Common within this community

- *Chromolaena odorata (*Triffid weed);
- *Lantana camara* (Lantana);
- Passiflora subpeltata (White Passion-flower);
- *Senna didymobotrya (*Peanut butter cassia);
- Solanum mauritianum; and
- *Tagetes minuta* (Khaki Bush).

Indigenous Species Commonly Associated with this community

- *Digitaria eriantha (*Common Finger Grass);
- *Panicum maximum (*Weeping Love Grass);
- *Vachellia nilotica. Subsp. Kraussiana (*Scented-pod Acacia); and
- *Ziziphus mucronata subsp. Mucronata* (Buffalo Thorn).

7.1.3 Secondary Grassland

Secondary grasslands are plant communities which have undergone modification, having deviated from their natural state to a point where they are unlikely to maintain the same structure, function and ecological processes. Secondary grasslands can however, be found at different states and ranges of recovery. Whilst some closely resemble primary grassland or have only recently achieved vegetation cover which resembles grassland, they are still collectively termed “secondary grasslands”. Secondary grassland is representative of the largest land cover category found within the proposed site and can be identified by abundance of common graminoid and forbs species which have a higher tolerance for anthropogenic pressures, but which do not contain any resemblance to primary vegetation in terms of structure and species composition.

As demonstrated in Figure 10 below, this community is dominated by graminoid species like *Digitaria eriantha, Panicum maximum and Sporobolus pyramidalis* with no particular dominance noted by said species. Although no prior site visit has been conducted, the grasslands observed within this community have become moribund and presumably have not been recently burnt or mowed. No future management is expected to have a negative impact on the land cover and will reduce species diversity and overall basal cover. In saying this a small sub-population of approximately fifty (50) *Aloe Pruinosa* were observed within a manmade indentation near the northern boundary of the site. This species has been classified as “Vulnerable” and must not be harmed during project life-cycle and avoidance or translocation must be considered by the Developer.

Figure 10: Snapshots of the Secondary Grassland communities occurring within the study area.

Exotic / Invasive Species Common within this community

- *Lantana camara* (Lantana);
- *Agave Americana* (Common Agave); and
- Tagetes minuta (Khaki Bush).

Indigenous Species Commonly Associated with this community

- *Aloe Pruinosa* (Powder Aloe);
- *Aristida junciformis subsp. junciformis* (Ngongoni grass);
- Cyperus textilis;
- *Dichrostachys cinerea* (Sickle Bush);
- *Digitaria eriantha* (Common Finger Grass);
- *Panicum maximum* (Weeping Love Grass); and
- *Vachellia nilotica. Subsp. Kraussiana* (Scented-pod Acacia).

7.2 Ecological Drivers and Processes

7.2.1 Historical Overview

According to Mucina and Rutherford (2018) the proposed study area is supposed to show primary or secondary characteristics of Dry Coast Hinterland Grassland (Gs 19). This vegetation type would usually contain a mixture of open grassland areas dominated by grassland species such as *Aristida juciformis* or contain *Vachellia spp., Cussonia spicata, Ziziphus mucronata, Coddia rudis and Ehretia* (Mucina & Rutherford, 2006). The ecological drivers for these habitats would consist of fire and grazing pressures, which are commonly associated with a healthy grassland habitat. According to Mucina and Rutherford (2006) grasslands have been identified as ecosystems where fire is a critical process which maintains both structural and textural patterns. Without a regular (one burn every one to four years) fire regime, grassland will be subjected to rapid bush encroachment and transformation of plant community. Like fire, grazing is greatly beneficial in grasslands by influencing both the canopy structure in grasslands and contributing towards species composition. Changes in grazing pressures, may either contribute positively or negatively within grassland where species will only occur depending on their ability to tolerate varying levels of grazing frequency (over to under grazing). In grasslands grazing may contribute towards the growth patterns of certain species, such as density / size, diversity and in some instances removes species from a plant community all together through overgrazing (Mucina and Rutherford, 2006). Although historic imagery is not available for this area before 2010, it is assumed that the woody vegetation now present on site would have been more restricted more closely toward the main watercourse in the northwest and the site would have played host to more of a grassland habitat, which has now encroached presumably without the application of regular burns.

7.2.2 Present-day Overview

The proposed development is located within a rural environment, which is surrounded mainly by residential suburbs and several heavy industrial zones in the west. With exception of the existing petrol filling station, the proposed site is undeveloped and currently exists as an open space surrounded by a main road (Archie Gumede Drive) in the south, a major NFEPA river in the west and two minor secondary roads in the north and east respectively. As described in Section 7.1 above, the current habitat consists mainly of woody thicket, which patches of secondary grassland which at the time of the survey played host to a number common bird species and insects.

As demonstrated in Figures 11 and 12 below (from 2010 to 2020) there is notable land cover changes taking place within the study area over a short passage of time. As previously discussed it is likely that changes in subjecting the property to regular burns has resulted in a woodier habitat, and with small patches of secondary grassland between each dense stand. The construction of a petrol filling station in 2013/2014 would have also presumably stopped the application of burns nearby due to safety concerns and presence of underground fuel storage tanks and nearby storage tank vents.

Figure 11: Historic imagery from 2010 which demonstrates the proposed site (GoogleEarth, 2021)

Figure 12: Historic imagery from 2020 which demonstrates the proposed site (Google Earth, 2021)

The construction of the petrol filling station in 2013/2014 would have applied a certain level of disturbance based pressure to the surrounding habitat, and which likely resulted in the proliferation of alien vegetation which currently exist throughout the study area (especially within the disturbed secondary grassland habitat). Overall, the veld appears to lack a management regime which should include such alien vegetation clearing and controlled burning within the secondary grassland areas. In saying this, fauna is expected to frequently make use of the available habitat on site, which provides suitable foraging and nesting conditions for a variety of different species. The variable habitat found on nearby properties, such as rivers, wetlands and open grasslands are also expected increase the diversity of species, but has somewhat been reduced as a result of the nearby vegetation cleared in the east.

7.2.3 Ecological Corridors and Connectivity

A high-level assessment of the site (as illustrated in Figure 1) finds that the proposed site is located within a green corridor which exists between the large industrial areas in the north and dense residential suburbs in the south. The green open spaces are owed mainly to the existence rivers systems, steams and wetland areas which meander and cut through the greater Pietermaritzburg area. These habitats are either not suitable for development, or have been retained through careful Municipal planning. The proposed footprint however, is strategically positioned at the cross-section of a main road (Archie Gumede Drive) and Sikhumbuzo Ngwenya Road and therefore would only add to an existing man-made barrier which would presumably force fauna to make use of alternative through-routes nearby. With the exception of avifauna, faunal movements within the greater study area are expected to take place in, and around the major river course which flows from south to north and eventually drains into a larger Msubduzi River and opens up into a significant ecological feature. The site currently exist rather as suitable habitat to forage, roost and breed rather than a critical passage for faunal movements and therefore development on this site is not expected to have a significant impact on the migratory movements of species.

7.3 Plant Species of Conservation Concern (SCC)

The following is a list of plant SCC which were identified during the field assessment and should the proposed project be authorised, permit applications with assigned Competent Authority must be submitted after the search and rescue site walk-through is completed.

Table 7: Plant Species of Conservation Concern (SCC) recorded during the field assessment

Scientific Name	Applicable Legislation	
	NFA (Act No. 84 of 1998)	PCO (Act No. 15 of 1974)
Aloe pruinosa		X (Schedule 12)

7.4 Faunal Species Assessment

An understanding of species abundance, distribution and occurrence is highly valued when considering the implementation of conservation strategies. This knowledge is fundamentally linked to planning land-uses and

ensuring sustainable developments within South Africa. In this report, the assessment of the available micro-habitats will be conducted in conjunction with the most recent faunal species distribution data. Whilst the objectives of this report focus specifically on Red Data Species, it must be noted that non-red data species will also be affected by the development and thus will benefit greatly from the mitigation techniques mentioned in this report.

Figure 13: Acanthocercus atricollis (Southern Tree Agama) photographed on site.

Figure 14: Nephila fenestrate (Golden Orb spider) on a well-established web.

***Figure 15: Acanthocercus atricollis (Common Bark Spider)* retreating to the safety of a branch**

7.4.1 Mammals

During this investigation conducted on the 13th of May 2021 no mammals were observed in-field, however 86 mammal species have recorded within the greater study area (QDS 2930CB). According to the data retrieved from

the Animal Demographic Virtual Museum (ADU, 2021) seven (7) of the 86 individual species are considered SCC and have been listed below.

Table 8: Red List mammal species likely to occur within QDS 2930CB

Scientific Name	Conservation Status (IUCN)	Likelihood of Occurrence (Low, Medium High)	Preferred Habitat
Aonyx capensis	NT	Low	Primarily an aquatic species, which reside near perennial and episodic rivers.
Chrysospalax villosus	VU	Low-Medium	A species which occupies densely vegetated grasslands, meadows and edges of wetland areas with a high affinity for light, sandy soil.
Miniopterus schreibersii	VU	Low	This species of bat roosts in caves, rock clefts and culverts, and only forage during the evening after sunset.
Myosorex cafer	VU	Low	In the KwaZulu-Natal Province, this species predominantly occurs within in Afromontane (mistbelt), scarp and coastal forests (Taylor 1998).
Mystromys albicaudatus	VU	Medium	Varying habitat preferences, and often found within savannah, grassland and semi-desert areas.
Otomys auratus	NT	Low	This species is associated with mesic grasslands and wetlands within alphine, montane and sub-montane regions with access to water (wetlands and rivers).
Panthera pardus	VU	Low	This species inhabits a wide variety of habitats, including grasslands, woodlands, savannas and forest regions.

7.4.2 Herpetofauna

Amphibians and reptiles are known to be secretive, and it is known that only full species lists can be generated by conducting field surveys over numerous seasons. It is not the specialist opinion that an additional site visit will be required as the proposed site does offer unique herpetofauna habitat.

The study area is expected to have a moderate herpetofaunal diversity with approximately 90 individual species known to occur within the QDS 2930CB. Of the 90 individual species, a total of four (4) species are considered to be of conservation importance and which have been illustrated in Tables 9 and 10 below.

Table 9: Red List reptile species likely to occur within QDS 2930CB

Scientific Name	Conservation Status (IUCN)	Likelihood of Occurrence (Low, Medium High)	Preferred Habitat
Bradypodion melanocephalum	NT	Low-medium	Not regarded as a habitat specialist, with a wide variety of habitat preference. Long grasses, reed and thicket.
Bradypodion thamnobates	EN	Low	Not regarded as a habitat specialist, with a wide variety of habitat preference, but more commonly found within Southern Mistbelt Forests, in well-vegetated gardens and along road verges.

Table 10: Red List amphibian species likely to occur within QDS 2930CB

Scientific Name	Conservation Status (IUCN)	Likelihood of Occurrence (Low, Medium High)	Preferred Habitat
Natalobatrachus bonebergi	EN	Low	N. bonebergi is always associated with forest streams and pools with rocky beds especially, but not exclusively, in ravines (Harrison et al. 2001).
Afrixalus spinifrons	NT	Low-medium	*A. spinifrons* inhabits Coastal Bushveld-Grassland and Moist Upland Grassland. *A. spinifrons* breeds in standing water, in dense sedge beds and inundated, grassy wetlands with abundant surface vegetation, while at higher altitudes, it inhabits marshes, dams, floodplains and riverbanks (Lambiris 1989a; Pickersgill 1996).

7.4.3 Avifauna

The presence of birds on site is often directly attributed towards the presence of food on site and the existence of suitable nesting grounds. During the field assessment a number of bird species were observed. All observed species were noted to be of a common status and are unlikely to be affected by the development.

According to the Southern African Bird Atlas Project 2 (SABAP2), 321 bird species are likely to occur within the greater study area. Of the 321 bird species, four (4) were listed to have a notable conservation status. These have been listed below in Table 11.

Table 11: Red List bird species likely to occur within the Coverage Summary 2935_3020

Scientific Name	Conservation Status (IUCN)	Likelihood of Occurrence (Low, Medium High)	Preferred Habitat
Gyps coprotheres	EN	Low	Occupies a variety of different habitat, with a high affinity for subsistence farmland and large reserves such as Hluhluwe Game Reserve where food resources are abundant. Breeding areas are rare, with only a several colonies which exist within South Africa. The closest potential habitat would be located within strip of KwaZulu-Natal Mistbelt Grassland located more than 15 kilometers away from the site.
Stephanoaetus coronatus	NT	Low	This species occupies dense forest and woodland areas, which can include exotic plantations of eucalyptus.
Balearica regulorum	EN	Low	Not a habitat specialist, being found in a variety of habitats (including built-up areas such as the old Clarewood Racecourse). Naturally found within open grasslands and savannas with access to freshwater such are wetland, dams and rivers.
Geronticus calvus	VU	Low	This species frequents open grasslands, specifically alpine and sour grassland types, without significant woody components including trees and bushes.

8. ECOLOGICAL SENSITIVITY

Vegetation has been used as a common biological indicator to identify the Present Ecological State (PES) or ecological health of ecosystems, given their overall ability to respond rapidly to disturbance. Conservative plant

species are the most commonly affected species given their high conservatism status, high sensitivity, narrow distribution ranges and low tolerance to disturbance, these species are the first to be eradicated in disturbed conditions (Rocchio, 2007). As such, areas that are highly disturbed will more than likely have non-conservative species that are not sensitive, have higher tolerance to disturbances and have broad distribution ranges (Rocchio, 2007).

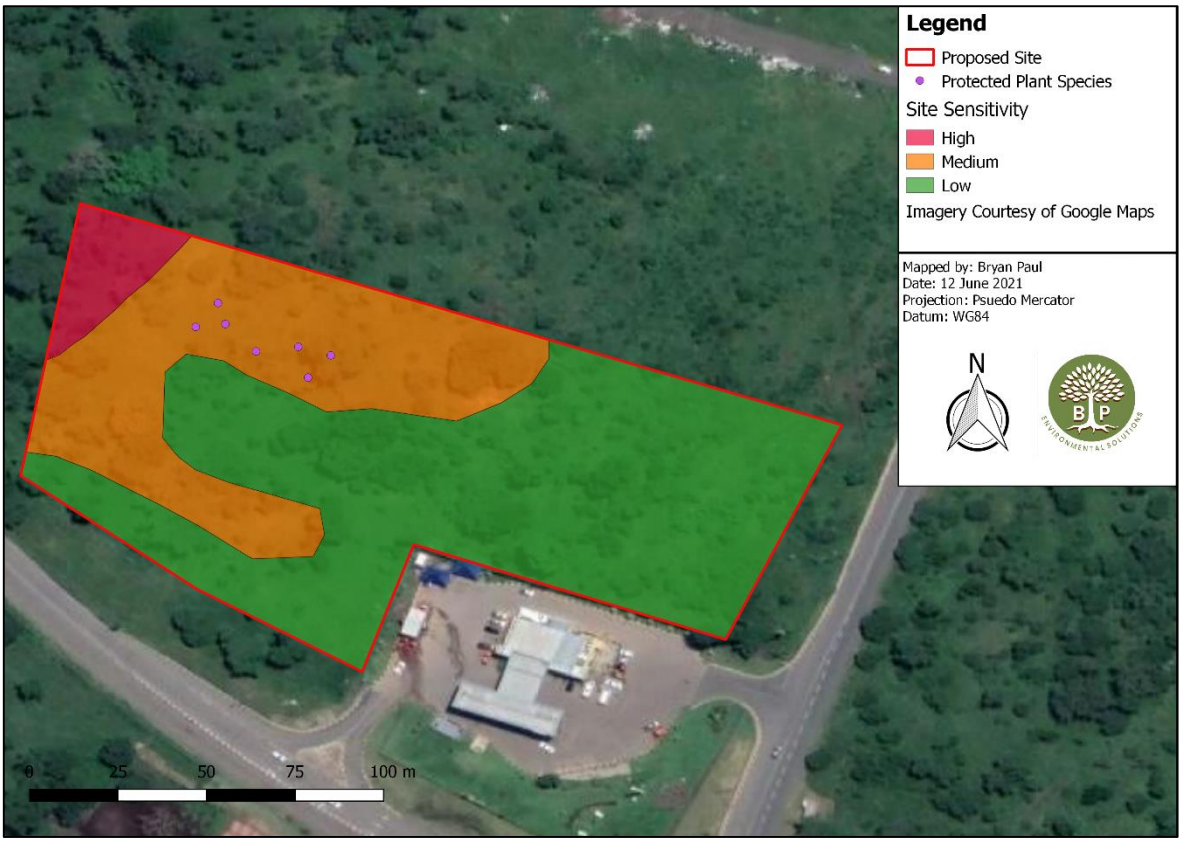

Figure 16: Sensitivity map of the proposed development

Figure 16 above provides a visual representation of the ecological sensitivity based on the findings observed both at a desktop level and during the field assessment conducted on the 13th of May 2021. Sensitivity is based on the present terrestrial ecology of the area and does not confirm the presence of wetland habitat which may occur on site, or nearby. However, the ecologist has considered a 30m buffer area around a potential nearby wetland habitat as highly sensitive and should remain undeveloped and adopted as an ecological ecotone. The remaining site sensitivity consisted of areas with medium to low sensitivity scores which are considered developable, but with site specific restrictions in place. Although the proposed site has limited highly degraded areas, transformation within all three plant communities (Degraded Secondary Grassland, Secondary Grassland and Thicket) has resulted in the overall reduction in ecological value and services, especially in areas which surrounded road networks, the existing petrol filling station and adhoc dumping and clearing nearby. Ecological integrity improves however, in a westerly directly and especially when bordering the denser thicket and wetland buffer. Whilst no faunal species of SCC were observed, this area was most noteworthy and active throughout the field assessment.

In addition to site sensitivity, Figure 16 illustrates the position of close to 50 individual protected plant species, which have been given a IUCN threat status of Vulnerable and must either be avoided or translocated to a suitable location nearby. This particular species (Aloe Pruinosa) is endemic to a small geographic region around Pietermaritzburg and therefore must be treated with care to avoid further individual losses to overall population. The area in which these specimens occur have been given a medium sensitivity rating, based on the assumption that each plant will survive the project.

9. POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

9.1 Impacts Likely to Arise from the Proposed Development

Ecosystems are naturally dynamic and subject to long-term stresses and changes to their nutrient, water and sediment supply. The way in which ecosystems respond to such perturbations is complex and variable, depending on the resilience and nature of these systems. According to Walker and Salt (2006), resilience is defined as the ability of a system to retain and maintain its essential structure, function, and feedbacks in the face of disturbance. Increased resilience of a system will reduce the likelihood of regime shifts which entails large, abrupt changes to the structure and function of systems, causing a shift from one stable state to another. Connected systems enable the dispersal of genes, individuals and communities of plant species, which enables high diversity within ecosystems (Evidentiary, 2015). Fragmented ecosystems, which are often the result of road networks, expansion of towns and the exchange of habitat for agriculture hinder movement of plant species and should disturbance take place, i.e. IAPS encroachment, plant species become out competed, particularly conservative species that have low resilience or tolerance to disturbances (Evidentiary, 2015).

The potential impacts associated with the proposed development were assessed using a quantitative impact assessment methodology which has been formalised to comply with Regulation 31(2)(I) of the NEMA (No. 107 of 1998). The aim of this assessment was to identify and assess the significance of all the potential impacts which may arise as a result of the proposed development. The methodology employed makes use of the following procedure:

1. Identification and assessment of potential impacts;
2. Prediction of the nature, duration, extent, likelihood and significance;
3. Identification of mitigation measures that could be implemented to reduce the significance of the potential impact; and
4. Evaluation of the significance of the potential impacts following the implementation of mitigation measures.

The significance is determined through a synthesis of the characteristics described above. The significance weightings for each potential impact are outlined in methodology section, in Table 1 above. Table 12 below

provides the potential impacts of the proposed development and the likely significance of impacts should mitigation measures be implemented.

9.2 Ecological Impact Assessment

Table 12: Potential impacts likely to arise as a result of using the preferred alternative

PHASE	ACTIVITY	RESULTING IMPACTS	IMPACT CATEGORY	SIGNIFICANCE RATING OF IMPACTS PRIOR TO MITIGATION		PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION	
Pre-Construction/ Construction and Operational Phases	Stripping of topsoil, sub-soil and vegetation for the construction of the facility.	• Decreased topsoil quality resulting in lowered plant growth rate. • Loss of indigenous species (flora & fauna). • Reduction is species diversity. • Habitat destruction and displacement of species. • Disruption to faunal movements and dispersal patterns. • Decreased bank stability. • Impact on Conservation objectives for a Critical Biodiversity Area (CBA). • Impact to a Threatened Ecosystem. • Increased erosion.	**Direct / Indirect**	Duration	3	• An ECO must be appointed throughout the various phases of the development. • A pre-construction walk-through must be conducted by a suitably qualified professional. This must be used to identified and count all individual protected plant species which must be applied for in a permit and translocated / avoided during construction. • Sufficient time must be allowed to apply for permits for all protected plant species found on site. No construction may commence within these areas, where protected plant species exist but where no permits have been issued. • Topsoil monitoring (depth and soil testing) must take place prior to soil stripping and backfilling. The ECO must determine if the quality of soil is satisfactory, prior to backfilling. • Topsoil must be sequentially removed in accordance with the requirements on site. • All topsoil must be adequately stored: o On a Flat surface; o Below two metres; o Suitably covered if stored for prolonged periods of time. o Separate from sub-soil and other stockpiles. o Not near watercourses • Amend the proposed layout to exclude all wetland habitat and apply a 30m buffer around said wetlands. • No clearance of vegetation must be allowed to take place outside of the construction footprint.	Duration	3
				Extent	3		Extent	2
				Likelihood	4		Likelihood	4
				Magnitude	8		Magnitude	6
				Significance rating	56		Significance rating	44

PHASE	ACTIVITY	RESULTING IMPACTS	IMPACT CATEGORY	SIGNIFICANCE RATING OF IMPACTS PRIOR TO MITIGATION		PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION	
						• A pre-construction walk through by a botanist must take place for accurate marking of species for removal and/ or translocation. • If any SCC or plant species high on the Red List are identified within the proposed footprint, effective rescue and relocation of them must be undertaken. • All temporary embankments that are considered sensitive to erosion must be adequately retained and supported (sandbags, fascine work, retaining blocks etc.). • Silt traps must be used to control silt from being washed off site and into the surrounding watercourse or natural habitat. • All toilet facilities must be located outside of any sensitive area and must not be found within 50m of a watercourse. Regular servicing will prevent any spillages. • No faunal species must be killed or hunted during the project life-cycle.		
Construction, Operational and Post Construction Phases	The ingress and egress of vehicles and/or plant from site.	• Reduced photosynthesis of nearby vegetation due to dust settling on leaves; • Trampling of vegetation outside of the development footprint due to vehicle movements; • Compaction of fertile soils leading to	**Direct/ Indirect**	Duration	2	- Traffic signs much be erected throughout the site, demarcating the following: ○ Speed limits; ○ Sensitive areas; and ○ No-go areas / ecotones - Dust suppression must be implemented on all access roads. This practise must be carefully monitored by the ECO and all water usage must be recorded throughout the project lifespan. - All temporary roads must receive rehabilitation prior to the closure of the site (deep-rip, backfilling of topsoil). - Vehicles may only traverse designated areas and access roads.	Duration	2
				Extent	2		Extent	2
				Likelihood	3		Likelihood	3
				Magnitude	6		Magnitude	2
				Significance rating	30		Significance rating	18

PHASE	ACTIVITY	RESULTING IMPACTS	IMPACT CATEGORY	SIGNIFICANCE RATING OF IMPACTS PRIOR TO MITIGATION		PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION	
		reduced plant growth and soil quality; and • Plant die-offs due to hydrocarbon spills from vehicles. • Animal fatalities due to traffic related incidents. • Displacement due to increased noise and vibrations.				- Heavy duty machinery must be stored in allocated areas and not left out in open spaces.		
Operational Phase	Utilisation of the facility.	• Adhoc clearing of vegetation during routine maintenance of the facility. • Illegal hunting and/or killing of local fauna. • Harvesting of local indigenous fauna for medicinal use. • Introduction of diseases through the failure to control pest animals.	**Direct / Indirect**	Duration Extent Likelihood Magnitude Significance rating	5 2 3 6 39	- No-go areas should be sign posted and communicated to all staff. - Routine maintenance should be conducted along the proposed boundary fence. - All hazardous waste must be adequately stored and disposed of at suitable facility. - No dumping of waste must be allowed at any point in time. - All stormwater drains must comply with South Africa legislations to avoid water and soil contamination on the surrounding environment.	Duration Extent Likelihood Magnitude Significance rating	5 1 3 2 24
Post-construction	Decommissioning of the construction site camp and laydown area.	• Spillages of oils fuels and chemicals causing the contamination of soils, surface and ground water; • Hardened/ compacted soils reduce the vegetation growth;	**Direct/ Indirect**	Duration Extent Likelihood Magnitude Significance rating	2 2 3 4 24	- All plant, structures, waste and equipment must either be off-hired or adequately removed from site. All documentation resulting from this activity must be kept by the Contractor and the ECO. - All waste generated by the activity must be adequately transported off site and disposed of at a registered waste receiving facility.	Duration Extent Likelihood Magnitude Significance rating	1 2 3 3 18

PHASE	ACTIVITY	RESULTING IMPACTS	IMPACT CATEGORY	SIGNIFICANCE RATING OF IMPACTS PRIOR TO MITIGATION		PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION	
		• Reinstatement of sub-standard topsoil reduces the growth and success of indigenous vegetation; • Proliferation of IAPS on site and into surrounding plant communities; • Introduction of exotic species through uninformed re-vegetation efforts. • Exposed, unsupported soil being eroded and causing erosion gullies; • Unmanaged grazing by livestock, inhibiting successful rehabilitation practises; • Poor rehabilitation throughout the construction and defect liability period. • Poor stormwater runoff, leading to erosion on site.				- Rehabilitation must be conducted on site, by adequately backfilling topsoil and reinstating indigenous vegetation. - All access roads must be deep-ripped and adequately rehabilitated. - Rehabilitation of the site must be monitored by an ECO. - Natural berms and contours must be reinstated by the Contractor prior to the closure of site. - Fire-fighting equipment must be available on site at all times. - Spill kits must be available on site at all times and must be suitably equipped to deal with spills. - Stockpiles must be cleared of IAPS and this must be checked before infill. - No stockpiles (spoil or topsoil) must be left behind after the construction phase, but rather must backfill and/or removed from site.		

9.3 Impact Assessment Analysis

Environmental Impact Assessment Regulations require an assessment of the impacts that may arise from the undertaking of an activity. The findings of the Ecological Impact Assessment Report are used to inform the Competent Authority's (CA) decision as to whether the activity should be permitted, permitted and subject to conditions that will mitigate the impacts to within acceptable levels or whether the proposed development should be refused. When considering the potential impacts of a proposed development, the following factors must be taken into account:

- The temporal boundaries (i.e. seasonality) of the impact;
- The spatial boundaries (i.e. site specific, local, regional) of the impact;
- Variables to be measured (i.e. soil and water quality through pH, nitrates and phosphates);
- Relationship between the variables (i.e. effect of sediment and turbidity on water quality);
- The magnitude/severity of the impact;
- The frequency and duration of the impact;
- The reversibility of the impact; and
- The probability of reducing or mitigating the impact.

Based on the activities listed in Table 12 above, and their associated impact scores, it is apparent that without mitigation, the proposed development will result in a net loss outcome regardless of the positioning of the facility within proposed site. The following causal factors were identified as being significant and would cause a detrimental effect to the current environment if left unmitigated:

- Clearance of indigenous vegetation and habitat resulting in:
    - The loss and/ or displacement of individual species (flora and fauna);
    - Fragmentation of intact thicket and grassland habitat;
    - Impact to secondary vegetation found within a "nationally threatened ecosystem (Ngongoni Veld);
    - Loss of provincially protected plant species (*Aloe Pruinosa);* and
    - Increased erosion and sediment load within surrounding watercourses.
- Excavation and stockpiling of soils resulting in:
    - Loss of quality of topsoil;
    - Mixing of sub-soil and topsoil;
    - Increased dust pollution;
- Spillages or leakages of hydrocarbons causing soil contamination;
- Poor staff training and encroachment into sensitive areas and poaching;
- Poor rehabilitation efforts causing the proliferation of Alien Invasive Plant Species.

- Introduction of diseases into the surrounding environment (fauna and flora) through the uncontrolled breading of pest animal within the facility (rodents).

Although no site alternatives were proposed at the time of compiling this report, the most significant impacts can be sufficiently minimised through the careful planning of the proposed layout presented for authorisation, and the careful implementation of the site specific mitigation techniques mentioned within this report. Overall, avoid of clearing natural vegetation and habitat is not possible and there will be losses experience within the proposed study area. However, as the proposed site contains no primary vegetation within the proposed footprint and there is already high levels transformation the overall impact on a local and national level is expected to be significantly lower and acceptable.

In saying this, the developer will remove a notable amount of indigenous vegetation from areas that have been classified as moderately sensitive and therefore must aim to improve the surrounding non-developable areas which fall outside of the boundary fence to offset the impact (permanent loss in habitat) of not being able to rehabilitate the permanent development footprint of the facility.

9.4 Recommendations

- It is recommended that the preferred alternative is positioned to avoid the highly sensitive areas.
- areas as possible.
- It is recommended that the 30 m ecotone is maintained as a non-development area. This area must be considered a no-go area during the project-cycle.
- An ECO must be appointed to oversee that the conditions stipulated in the Environmental Authorisation/ EMPr are carried out.
    - Pre-construction environmental induction for all construction staff on site must be conducted, this will include the following as a minimum requirement to be covered:
    - Dust suppression – Agreed practical methods confirmed by the Contractor;
    - All water use on site must be recorded throughout the lifespan of the project.
    - Demarcation of no-go areas (surrounding properties and highly sensitive areas);
    - Expected conduct of staff on site – not harvesting vegetation, usage of fire on site, reporting incidents, and relationship with ECO.
    - Objectives and conditions of the approved EA, EMPr, Method Statements, ECO Audit Reports and Recommendations etc.
    - Spill Protocol (small and large spills); and
    - Emergency Numbers (ECO, Snake Expert, SAPS etc.).
- All areas earmarked to be cleared, must be adequately staked and inspected by the ECO to ensure that no fauna and/ or indigenous vegetation is accidentally injured/ killed / removed by construction activities on site.

- An accurate account of water usage (drinking, dust suppression etc.) must be kept by the Contractor.
- All construction vehicles should adhere to clearly defined and demarcated roads. No adhoc roads may be constructed without prior permission of the ECO and Engineers.
- Dust suppression and erosion management should be an integral component of the construction process.
- No dumping or burying of building waste or spoil material from the development should take place on areas other than a licensed landfill site.
- All hazardous materials should be stored appropriately to prevent contamination of the proposed development site. Any accidental chemical, fuel and oil spills that occur at the project site should be cleaned up appropriately as related to the nature of the spill.
    - An Environmental Incident Register must be kept throughout the project lifecycle; this will be used to record the following:
    - Rock falls into no-go areas;
    - Accidental spills of hazardous substances;
    - Observed die-offs of vegetation (on site and nearby);
    - Accidental removal of plants;
    - Complaints from Interest and Affected Parties/ Persons (I&APs);
- A search and rescue site walk-through must be completed by a suitably qualified specialist prior to construction to locate and mark SCC for translocation or preservation.
- If trenches need to be dug for drainage or other purposes, these should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.
- Tool box talk must contain faunal and floral topics, at least once a month to all staff.
- Control measures must be in place during construction and the operation phases of the development to prevent the proliferation of IAPS and noxious weeds on site.

10. CONCLUSION AND SPECIALIST OPINION

The proposed development is located within a site which demonstrates a fairly homogenous landscape, with moderate to low species diversity. The study area contains three (3) main floral communities, namely secondary grassland, degraded secondary grassland and thicket. Each community provides unique setting for local fauna to existing and make use of the ecological services provided.

During the desktop assessment it was confirmed that there are no protected areas found within the boundaries of the site, nor will the proposed development intercept any know protected areas expansion programme which existed at the time of compiling this report. However, according to the Protected Areas Register (PAR, 2020) there are three (3) formally protected area which occur within ten (10) kilometres of the site. As there are no formally registered support areas, or ecological corridors located between said protected areas, nor will the proposed

activities associated with the facility in question indirectly impact these areas it has been confirmed that this will not be of any great significance to this assessment.

According to the National Management: Biodiversity Act (Act 10 of 2004) the site is situation within a threatened ecosystem, namely the Ngongoni Veld (SVs 4) which has a threat status of "Vulnerable". Although the decision rests with the local Competent Authority, no primary vegetation (untransformed by local stressors) was observed during the field assessment and therefore the proposed project is unlikely to jeopardise the conservation objective for this ecosystem in terms of protected undisturbed habitat. However, as the study area still contains natural vegetation and species associated with the benchmark vegetation type (Dry Coast Hinterland Grassland (Gs 19) a loss in natural habitat is expected to be unavoidable.

The proposed development was not found within a Critical Biodiversity Areas (CBA) according to the KwaZulu-Natal Biodiversity Sector Plan (EKZN, 2014), but is located within close proximity to land (in the south) which has been listed. However, as this land is now transformed, no indirect impact is expected to be associated with the proposed development. Additionally, no natural forest occurs within the study area.

During the field assessment, which took place on the 13th of May 2021 one (1) protected plant species (in terms of the KZN Provincial Conservation Ordinance (KZN PCO)) namely *Aloe Pruinosa* was observed. It has been recommended that a pre-construction site walk-through is conducted at least three (3) months before construction is set to commence to confirm the location and frequency of each specimen. A permit application must thereto be lodged with the KZN Wildlife. No faunal SCC were observed during the site walk-through, but during the desktop assessment the following species of conservation concern are known to occur within the QDS 2930CB or nearby:

Scientific Name	Conservation Status (IUCN)	Likelihood of Occurrence (Low, Medium, High)
Avifauna		
Gyps coprotheres	EN	Low
Stephanoaetus coronatus	NT	Low
Balearica regulorum	EN	Low
Geronticus calvus	VU	Low
Herpetofauna		
Bradypodion melanocephalum	NT	Low-medium
Bradypodion thamnobates	EN	Low
Natalobatrachus bonebergi	EN	Low
Afrixalus spinifrons	NT	Low-medium
Mammalia		
Aonyx capensis	NT	Low
Chrysospalax villosus	VU	Low-Medium

Miniopterus schreibersii	VU	Low
Myosorex cafer	VU	Low
Mystromys albicaudatus	VU	Medium
Otomys auratus	NT	Low
Panthera pardus	VU	Low

According to the latest national dataset for freshwater resources (SANBI, 2018), the proposed development occurs within a portion of a "seep" wetland (more than 40% of the development footprint) and within 500m of one (1) NFEPA river and two (2) additional wetlands. Although the delineation of wetlands was not a part of this assessment no visual evidence was recorded which demonstrated that any wetland ecosystem occurs within the study area. However, it was confirmed that wetland habitat exists just outside of the site boundary and as such a 30 m protective buffer has been applied around this system to ensure the maintenance of its ecological function and stability. However, should a wetland specialist expand on these findings the recommendation of that specialist should be read in conjunction with the findings of this report.

Taking all of the factors which have been discussed above, the impact assessment completed in Section 12 concluded that the proposed development would have a low-medium ecological impact on the terrestrial environment after all of the recommended mitigation techniques have been implemented.

It is therefore the specialist's recommendation that the development proceed until strict management, and provided that the recommendations and mitigation techniques provided within this report are followed throughout the life-cycle of the proposed development. Should the facility ever become derelict or no longer economically viable, the specialist further requests that pre-development conditions are put in place by Competent Authority to safeguard the integrity of surrounding environment and that the developer will be responsible for the land until it is adequately rehabilitated.

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12. APPENDIX 1 – SPECIES LISTS

Plant species expected to occur within the study area during (POSA, 2021)

Family Name	Botanical Name	Conservation Status
Agapanthaceae	*Agapanthus campanulatus subsp. campanulatus*	LC
Agapanthaceae	*Agapanthus caulescens subsp. Gracilis*	LC
Agapanthaceae	*Agapanthus praecox subsp. orientalis*	LC
Agavaceae	*Agave wercklei*	LC
Amaranthaceae	*Achyranthes aspera var. sicula*	LC
Amaranthaceae	*Achyropsis leptostachya*	LC
Amaranthaceae	*Amaranthus thunbergii*	LC
Amaranthaceae	*Amaranthus thunbergii*	LC
Apiaceae	*Afrosciadium caffrum*	LC
Apiaceae	*Afrosciadium natalense*	LC
Apiaceae	*Alepidea peduncularis*	Data Deficient
Apocynaceae	*Acokanthera oppositifolia*	LC
Apocynaceae	*Brachystelma franksiae subsp. franksiae*	VU
Araliaceae	*Cussonia spicata*	LC
Asphodelaceae	*Aloe candelabrum*	NT
Asphodelaceae	*Aloe kraussii*	LC
Asphodelaceae	*Aloe maculata subsp. maculata*	LC
Asphodelaceae	*Aloe mudenensis*	LC
Asphodelaceae	*Aloe parvibracteata*	LC
Asphodelaceae	*Aloe spicata*	LC
Asphodelaceae	*Aloe viridiana*	LC
Asphodelaceae	*Aloiampelos tenuior*	LC
Asphodelaceae	*Bulbine frutescens*	LC
Asteraceae	*Acanthospermum australe*	Exotic
Asteraceae	*Afroaster hispidus*	LC
Asteraceae	*Afroaster pleiocephalus*	LC
Boraginaceae	*Ehretia obtusifolia*	LC
Cephaloziaceae	*Alobiellopsis heteromorpha*	LC
Cyatheaceae	*Alsophila capensis*	LC
Cyatheaceae	*Alsophila dregei*	LC
Cyperaceae	*Abildgaardia ovata*	LC
Cyperaceae	*Cyperus albostriatus*	LC
Euphorbiaceae	*Acalypha angustata*	LC
Euphorbiaceae	*Acalypha depressinerva*	LC
Euphorbiaceae	*Acalypha ecklonii*	LC
Euphorbiaceae	*Acalypha glandulifolia*	LC

Euphorbiaceae	*Acalypha peduncularis*	LC
Euphorbiaceae	*Acalypha villicaulis*	LC
Euphorbiaceae	*Adenocline acuta*	LC
Euphorbiaceae	*Adenocline pauciflora*	LC
Fabaceae	*Abrus laevigatus*	LC
Fabaceae	*Adenopodia spicata*	LC
Fabaceae	*Aeschynomene brevifolia*	LC
Fabaceae	*Albizia adianthifolia var. adianthifolia*	LC
Fabaceae	*Alysicarpus rugosus subsp. perennirufus*	LC
Fabaceae	*Vachellia karroo*	LC
Fabaceae	*Vachellia sieberiana*	LC
Fabaceae	*Vachellia xanthophloea*	LC
Hyacinthaceae	*Albuca baurii*	LC
Hyacinthaceae	*Albuca setosa*	LC
Hyacinthaceae	*Albuca tortuosa*	LC
Hyacinthaceae	*Albuca virens subsp. virens*	LC
Lamiaceae	*Ajuga ophrydis*	LC
Loranthaceae	*Agelanthus kraussianus*	LC
Malpighiaceae	*Acridocarpus natalitius var. natalitius*	Not Evaluated
Malvaceae	*Abutilon grandiflorum*	LC
Malvaceae	*Sida rhombifolia*	LC
Meteoriaceae	*Aerobryopsis capensis*	LC
Orobanchaceae	*Alectra sessiliflora*	LC
Poaceae	*Acroceras macrum*	LC
Poaceae	*Agrostis barbuligera var. barbuligera*	LC
Poaceae	*Agrostis bergiana var. bergiana*	LC
Poaceae	*Agrostis lachnantha var. lachnantha*	LC
Poaceae	*Alloteropsis semialata subsp. eckloniana*	LC
Poaceae	*Alloteropsis semialata subsp. semialata*	LC
Podocarpaceae	*Afrocarpus falcatus*	LC
Pteridaceae	*Adiantum capillus-veneris*	LC
Pteridaceae	*Adiantum hispidulum*	LC
Pteridaceae	*Adiantum hispidulum var. hispidulum*	LC
Pteridaceae	*Adiantum poiretii*	LC
Rubiaceae	*Afrocanthium mundianum*	LC
Rubiaceae	*Agathisanthemum bojeri subsp. Bojeri*	LC
Rubiaceae	*Agathisanthemum chlorophyllum var. chlorophyllum*	LC
Rubiaceae	*Alberta magna*	NT
Sapindaceae	*Allophylus africanus var. africanus*	LC

Sapindaceae	*Allophylus decipiens*	LC
Sapindaceae	*Allophylus dregeanus*	LC
Stilbaceae	*Anastrabe integerrima*	LC
Verbenaceae	*Lippia javanica*	LC

Plant species that were recorded during the field assessment

Family Name	Botanical Name	Conservation Status	Frequency On Site
Agavaceae	*Agave Americana*	Naturalised Exotic Weed	3
Araliacae	*Schefflera arboricola*	Emerging Invasive	3
Asphodelaceae	*Aloe pruinosa*	VU (South African Endemic)	<50
Asteraceae	*Tagetes minuta*	Naturalised Exotic Weed	Very Common
Bignoniaceae	*Tecoma stans*	NEMBA Cat 1b	2
Convolvulaceae	*Ipomoea indica*	NEMBA Cat 1b	<5
Cucurbitaceae	*Diplcyclos palmatus*	NEMBA Cat 1a	2
Cyperaceae	*Cyperus textilis*	LC	Common
Fabaceae	*Dichrostachys cinerea*	LC	Very Common
Fabaceae	*Vachellia nilotica. Subsp. Kraussiana*	LC	Common
Fabaceae	*Vachellia sieberiana var. woodii*	LC	Common
Fabaceae	*Erythrina lystistemon*	LC	<4
Fabaceae	*Senna didymobotrya*	NEMA Cat 1b	Common
Fabaceae	*Calpurnia aurea*	LC	1
Fabaceae	*Albizia procera*	NEMA Cat 1b	<5
Lamiaceae	*Plectranthus fruticosus*	LC	<10
Malvaceae	*Sparrmannia ricinocarpa*	LC	1
Meliaceae	*Melia azedarach*	NEMBA Cat 1b	<5
Moraceae	*Morus alba*	NEMBA Cat 3	Common
Moraceae	*Ficus sur*	LC	1
Passifloraceae	*Passiflora subpeltata*	NEMBA Cat 1b	3
Poaceae	*Chloris gayana*	LC	Common
Poaceae	*Panicum maximum*	LC	Common
Poaceae	*Sporobolus pyramidalis*	LC	Common
Poaceae	*Cymbopogon caesius*	LC	Common
Poaceae	*Setaria sphacelata var. sericea*	LC	Common
Poaceae	*Cynodon dactylon*	LC	Very Common
Poaceae	*Digitaria eriantha*	LC	Common
Poaceae	*Eragrostis curvula*	LC	Common
Poaceae	*Hyparrhenia tamba*	LC	<4 clumps
Poaceae	*Hyparrhenia hirta*	LC	Common
Rhamnaceae	*Ziziphus mucronata subsp. Mucronata*	LC	Common
Solanaceae	*Solanum lycopersicum var. cerasiforme*	Exotic	<5

Solanaceae	*Solanum mauritianum*	NEMBA Cat 1b	Common
Solanaceae	*Solanum incanum*	NEMBA Cat 1b	2
Verbenaceae	*Lantana camara*	NEMBA Cat 1b	Very Common
Verbenas	*Duranta erecta*	Exotic	<10

Mammal Species Recorded within QDS 2930CB (ADU, 2021) – MammalMap

Scientific Name	Conservation Status (IUCN)	Likelihood of Occurrence (Low, Medium High)
Aepyceros melampus	LC	High
Aethomys ineptus	LC	Medium
Aethomys namaquensis	LC	Low
Amblysomus hottentotus	LC	Low
Aonyx capensis	LC	Low
Atilax paludinosus	LC	Low
Canis mesomelas	LC	Low
Caracal caracal	LC	Low
Chaerephon pumilus	LC	Low
Chlorocebus pygerythrus	LC	Low
Chrysospalax villosus	**VU**	Low-medium
Connochaetes taurinus	LC	Low
Crocidura cyanea	LC	Low
Crocidura flavescens	LC	Medium
Crocidura fuscomurina	LC	Low
Crocidura mariquensis	LC	Low
Cryptomys hottentotus	LC	Low
Damaliscus pygargus phillipsi	LC	Low
Dendromus mesomelas	LC	Low
Dendromus mystacalis	LC	Low
Epomophorus crypturus	LC	Low
Epomophorus wahlbergi	LC	Medium
Equus quagga	LC	Low
Genetta tigrina	LC	Medium
Giraffa giraffa giraffa	LC	Low
Graphiurus (Graphiurus) murinus	LC	Low
Herpestes ichneumon	LC	Low
Herpestes sanguineus	LC	Low
Hipposideros caffer	LC	High
Hystrix africaeaustralis	LC	Low
Ichneumia albicauda	LC	Low
Ictonyx striatus	LC	Low

Kobus ellipsiprymnus	LC	Low
Lemniscomys rosalia	LC	Medium
Leptailurus serval	LC	Low
Mastomys natalensis	LC	High
Miniopterus fraterculus	LC	High
Miniopterus inflatus	LC	Low
Miniopterus natalensis	LC	High
Miniopterus schreibersii	**VU**	Low
Mus (Nannomys) minutoides	LC	Low
Myosorex cafer	**VU**	Low
Myosorex varius	LC	High
Myotis tricolor	LC	High
Mystromys albicaudatus	**VU**	Low
Neoromicia capensis	LC	Medium
Neoromicia nana	LC	Low
Nycteris thebaica	LC	High
Otolemur crassicaudatus	LC	Low
Otomops martiensseni	LC	Low
Otomys angoniensis	LC	Low
Otomys auratus	**NT**	Low
Ourebia ourebi	LC	Low
Panthera pardus	**VU**	Low
Philantomba monticola	LC	Low
Pipistrellus kuhlii	LC	Low
Poecilogale albinucha	LC	Medium
Procavia capensis	LC	Low
Pronolagus rupestris	LC	Low
Rattus norvegicus	LC	Medium
Rattus rattus	LC	High
Redunca arundinum	LC	Low
Rhabdomys pumilio	LC	High
Rhinolophus clivosus	LC	High
Rhinolophus simulator	LC	High
Rhinolophus swinnyi	LC	Low
Saccostomus campestris	LC	Low
Scotophilus dinganii	LC	Medium
Scotophilus nigrita	LC	Low
Scotophilus viridis	LC	Low
Suncus infinitesimus	LC	Low

Suncus lixus	LC	Low
Sylvicapra grimmia	LC	Low
Tadarida aegyptiaca	LC	Medium
Taphozous (Taphozous) mauritianus	LC	Low
Thryonomys swinderianus	LC	Low
Tragelaphus angasii	LC	Low
Tragelaphus scriptus	LC	Low
Tragelaphus strepsiceros	LC	Low

Reptile Species Recorded within QDS 2930CB (ADU, 2021) –ReptileMap

Scientific Name	Conservation Status (IUCN)	Likelihood of Occurrence (Low, Medium High)
Acanthocercus atricollis	*LC*	Confirmed
Afroedura pondolia	*LC*	Low
Afrotyphlops bibronii	*LC*	Medium
Agama aculeata distanti	*LC*	Low
Agama atra	*LC*	Low
Aparallactus capensis	*LC*	Medium
Atractaspis bibronii	*LC*	Low
Bitis arietans arietans	*LC*	Medium
Boaedon capensis	*LC*	Medium
Bradypodion melanocephalum	*NT*	Low-medium
Bradypodion thamnobates	*EN*	Low
Causus rhombeatus	*LC*	Medium
Chamaeleo dilepis	*LC*	Medium
Chamaesaura macrolepis	*LC*	Low
Cordylus vittifer	*LC*	Low
Crotaphopeltis hotamboeia	*LC*	Low
Dasypeltis inornata	*LC*	Medium
Dasypeltis scabra	*LC*	Low
Dendroaspis polylepis	*LC*	Low
Dispholidus typus typus	*LC*	Medium
Duberria lutrix lutrix	*LC*	Medium
Elapsoidea sundevallii sundevallii	*LC*	Medium
Gerrhosaurus flavigularis	*LC*	Low
Hemachatus haemachatus	*LC*	Low
Hemidactylus mabouia	*LC*	High
Homoroselaps dorsalis	*LC*	Low
Homoroselaps lacteus	*LC*	Low

Kinixys natalensis	*LC*	Low
Lamprophis aurora	*LC*	Low
Lamprophis guttatus	*LC*	Medium
Leptotyphlops scutifrons conjunctus	*LC*	Low
Leptotyphlops scutifrons scutifrons	*LC*	Low
Limaformosa capensis	*LC*	Low
Lycodonomorphus inornatus	*LC*	Medium
Lycodonomorphus laevissimus	*LC*	Low
Lycodonomorphus rufulus	*LC*	Medium
Lycophidion capense capense	*LC*	Medium
Lygodactylus capensis	*LC*	Medium
Macrelaps microlepidotus	*LC*	Low
Naja mossambica	*LC*	Medium
Nucras lalandii	*LC*	Low
Pachydactylus maculatus	*LC*	Low
Panaspis wahlbergii	*LC*	Medium
Pelomedusa galeata	*LC*	Low
Philothamnus hoplogaster	*LC*	Medium
Philothamnus occidentalis	*LC*	Low
Philothamnus semivariegatus	*LC*	Low
Psammophis brevirostris	*LC*	Medium
Psammophis crucifer	*LC*	Low
Psammophylax rhombeatus	*LC*	Low
Pseudaspis cana	*LC*	Medium
Pseudocordylus melanotus subviridis	*LC*	Low
Python natalensis	*LC*	Medium
Scelotes mossambicus	*LC*	Low
Trachylepis capensis	*LC*	Low
Trachylepis homalocephala	*LC*	Low
Trachylepis punctatissima	*LC*	Low
Trachylepis varia sensu lato	*LC*	Confirmed
Varanus albigularis albigularis	*LC*	Low
Varanus niloticus	*LC*	High

Amphibian Species Recorded within QDS 2930CB (ADU, 2021) –FrogMap

Scientific Name	Conservation Status (IUCN)	Likelihood of Occurrence (Low, Medium High)
Afrixalus spinifrons	NT	Low-medium
Amietia delalandii	LC	Low

Arthroleptella hewitti	LC	Low
Arthroleptis wahlbergi	LC	Low
Breviceps adspersus	LC	Low
Breviceps verrucosus	LC	Low
Cacosternum boettgeri	LC	Medium
Cacosternum nanum	LC	Medium
Hadromophryne natalensis	LC	Low
Hyperolius marmoratus	LC	Low
Hyperolius marmoratus taeniatus	LC	Low
Hyperolius microps	LC	Low
Hyperolius pusillus	LC	Medium
Hyperolius semidiscus	LC	Medium
Hyperolius tuberilinguis	LC	Low
Kassina senegalensis	LC	Medium
Leptopelis mossambicus	LC	Low
Leptopelis natalensis	LC	Low
Natalobatrachus bonebergi	EN	Low
Phrynobatrachus mababiensis	LC	Medium
Phrynobatrachus natalensis	LC	High
Ptychadena oxyrhynchus	LC	Medium
Schismaderma carens	LC	Medium
Sclerophrys capensis	LC	Low
Sclerophrys gutturalis	LC	High
Semnodactylus wealii	LC	Medium
Strongylopus fasciatus	LC	Medium
Strongylopus grayii	LC	Low
Tomopterna natalensis	LC	Medium
Xenopus laevis	Exotic	Low

Avifaunal Species Recorded within QDS 2930DB (ADU, 2021) –SABAP2

Scientific Name	**Conservation Status (IUCN)**	**Likelihood of Occurrence (Low, Medium High)**
Accipiter melanoleucus	LC	Medium
Accipiter minullus	LC	Low
Accipiter rufiventris	LC	Low
Accipiter tachiro	LC	Medium
Acridotheres tristis	LC	High
Acrocephalus arundinaceus	LC	Low
Acrocephalus baeticatus	LC	Low

Acrocephalus gracilirostris	LC	Medium
Acrocephalus palustris	LC	Low
Acrocephalus schoenobaenus	LC	Low
Actitis hypoleucos	LC	Low
Actophilornis africanus	LC	Low
Agapornis roseicollis	LC	**Low**
Alcedo semitorquata	LC	Low
allinula chloropus	LC	Low
Alopochen aegyptiaca	LC	Medium
Amadina erythrocephala	LC	Low
Amandava subflava	LC	Low
Amblyospiza albifrons	LC	High
Anas erythrorhyncha	LC	Low
Anas hybrid	LC	Low
Anas hybrid	LC	Medium
Anas platyrhynchos	LC	Low
Anas platyrhynchos	LC	Low
Anas sparsa	LC	Low
Anas undulata	LC	Low
Anastomus lamelligerus	LC	Low
Andropadus importunus	LC	Medium
Anhinga rufa	LC	Low
Anomalospiza imberbis	LC	Low
Anser anser	LC	Low
Anthus cinnamomeus	LC	Medium
Anthus leucophrys	LC	Low
Anthus nicholsoni	LC	Low
Apalis flavida	LC	Low
Apalis thoracica	LC	High
Apaloderma narina	LC	Low
Apus affinis	LC	High
Apus apus	LC	Low
Apus barbatus	LC	Medium
Apus caffer	LC	Medium
Apus horus	LC	Low
Ardea alba	LC	
Ardea cinerea	LC	High
Ardea goliath	LC	Low
Ardea intermedia	LC	Low

Ardea melanocephala	LC	High
Ardea purpurea	LC	Low
Ardeola ralloides	LC	Low
Asio capensis	LC	Low
Balearica regulorum	EN	Low
Batis capensis	LC	Medium
Batis molitor	LC	High
Bostrychia hagedash	LC	High
Bradypterus baboecala	LC	Medium
Bradypterus barratti	LC	Low
Bubo africanus	LC	Medium
Bubulcus ibis	LC	Medium
Buphagus erythrorynchus	LC	Low
Burhinus capensis	LC	Low
Burhinus vermiculatus	LC	Low
Buteo buteo	LC	Medium
Buteo rufofuscus	LC	Medium
Buteo trizonatus	LC	Low
Butorides striata	LC	Low
Calidris pugnax	LC	Low
Camaroptera brachyura	LC	High
Campephaga flava	LC	Low
Campethera abingoni	LC	High
Caprimulgus pectoralis	LC	Low
Ceblepyris caesius	LC	Low
Cecropis abyssinica	LC	High
Cecropis cucullata	LC	Low
Centropus burchellii	LC	High
Cercotrichas leucophrys	LC	High
Ceryle rudis	LC	Medium
Chalcomitra amethystina	LC	High
Chalcomitra senegalensis	LC	Low
Charadrius pecuarius	LC	Low
Charadrius tricollaris	LC	Medium
Chlidonias leucopterus	LC	Low
Chlorocichla flaviventris	LC	Low
Chlorophoneus olivaceus	LC	Medium
Chlorophoneus sulfureopectus	LC	Medium
Chrysococcyx caprius	LC	High

Chrysococcyx cupreus	LC	High
Chrysococcyx klaas	LC	High
Ciconia ciconia	LC	Low
Ciconia episcopus	LC	Medium
Ciconia nigra	LC	Low
Cinnyricinclus leucogaster	LC	Medium
Cinnyris afer	LC	Low
Cinnyris chalybeus	LC	Medium
Cinnyris talatala	LC	High
Circaetus cinereus	LC	Low
Circaetus pectoralis	LC	Low
Circus ranivorus	LC	Low
Cisticola aberrans	LC	Medium
Cisticola ayresii	LC	Low
Cisticola chiniana	LC	High
Cisticola cinnamomeus	LC	Low
Cisticola erythrops	LC	Medium
Cisticola fulvicapilla	LC	High
Cisticola juncidis	LC	Medium
Cisticola lais	LC	Low
Cisticola natalensis	LC	Medium
Cisticola tinniens	LC	Medium
Clamator jacobinus	LC	Low
Coccopygia melanotis	LC	Low
Colius striatus	LC	Confirmed
Columba arquatrix	LC	Medium
Columba guinea	LC	Medium
Columba larvata	LC	Low
Columba livia	LC	Medium
Coracias garrulous	LC	Low
Corvus albicollis	LC	Medium
Corvus albus	LC	Medium
Corvus capensis	LC	Low
Corythornis cristatus	LC	Medium
Cossypha caffra	LC	Confirmed
Cossypha dichroa	LC	Medium
Cossypha natalensis	LC	Confirmed
Coturnix coturnix	LC	Low
Crithagra gularis	LC	Medium

Crithagra mozambica	LC	Confirmed
Crithagra scotops	LC	Low
Crithagra sulphurata	LC	Medium
Cuculus canorus	LC	Low
Cuculus clamosus	LC	Medium
Cuculus gularis	LC	Low
Cuculus solitarius	LC	Medium
Cyanomitra olivacea	LC	Medium
Cyanomitra veroxii	LC	Low
Cypsiurus parvus	LC	Medium
Delichon urbicum	LC	Low
Dendrocygna bicolor	LC	Low
Dendrocygna viduata	LC	Low
Dendropicos fuscescens	LC	High
Dendropicos griseocephalus	LC	High
Dicrurus adsimilis	LC	Confirmed
Dicrurus ludwigii	LC	Low
Dryoscopus cubla	LC	High
Egretta garzetta	LC	
Elanus caeruleus	LC	Medium
Emberiza flaviventris	LC	Medium
Emberiza tahapisi	LC	Low
Estrilda astrild	LC	Medium
Euplectes afer	LC	Low
Euplectes albonotatus	LC	Low
Euplectes ardens	LC	Medium
Euplectes axillaris	LC	Medium
Euplectes capensis	LC	Low
Euplectes orix	LC	High
Euplectes progne	LC	Low
Falco biarmicus	LC	Medium
Falco naumanni	LC	Low
Falco peregrinus	LC	Medium
Falco rupicolus	LC	Low
Fulica cristata	LC	Low
Gallinago nigripennis	LC	Low
Gallirex porphyreolophus	LC	High
Geronticus calvus	VU	Low
Gymnoris superciliaris	LC	Medium

Gyps coprotheres	EN	Low
Halcyon albiventris	LC	High
Haliaeetus vocifer	LC	Medium
Hedydipna collaris	LC	High
Hieraaetus pennatus	LC	Low
Hieraaetus wahlbergi	LC	Medium
Himantopus himantopus	LC	Low
Hippolais icterina	LC	Low
Hirundo albigularis	LC	High
Hirundo rustica	LC	High
Hirundo smithii	LC	Low
Iduna natalensis	LC	Low
Indicator indicator	LC	Medium
Indicator minor	LC	High
Indicator variegatus	LC	Low
Ispidina picta	LC	Low
Ixobrychus minutus	LC	
Jynx ruficollis	LC	High
Lagonosticta rubricata	LC	Medium
Lagonosticta senegala	LC	Low
Lamprotornis nitens	LC	High
Laniarius ferrugineus	LC	High
Lanius collaris	LC	High
Lanius collaris	LC	High
Lanius collurio	LC	Medium
Lanius minor	LC	Low
Lanius minor	LC	Low
Lophaetus occipitalis	LC	High
Lophoceros alboterminatus	LC	Low
Lybius torquatus	LC	High
Macronyx capensis	LC	Low
Macronyx croceus	LC	Medium
Malaconotus blanchoti	LC	Low
Mandingoa nitidula	LC	Low
Megaceryle maxima	LC	Medium
Melaenornis pammelaina	LC	Medium
Melaenornis silens	LC	High
Melaniparus niger	LC	High
Merops pusillus	LC	Low

Microcarbo africanus	LC	Low
Milvus aegyptius	LC	High
Mirafra africana	LC	High
Motacilla aguimp	LC	Medium
Motacilla capensis	LC	High
Motacilla clara	LC	Low
Muscicapa adusta	LC	Confirmed
Muscicapa caerulescens	LC	Low
Muscicapa striata	LC	Medium
Nectarinia famosa	LC	Low
Netta erythrophthalma	LC	Low
Nilaus afer	LC	Medium
Notopholia corusca	LC	Low
Numida meleagris	LC	Low
Nycticorax nycticorax	LC	Low
Oenanthe familiaris	LC	Medium
Onychognathus morio	LC	High
Oriolus larvatus	LC	Medium
Ortygospiza atricollis	LC	Low
Passer diffuses	LC	Medium
Passer domesticus	LC	Confirmed
Passer melanurus	LC	Medium
Pavo cristatus	LC	Low
Pelecanus rufescens	LC	Low
Peliperdix coqui	LC	Low
Pernis apivorus	LC	Low
Phalacrocorax lucidus	LC	Low
Phoeniculus purpureus	LC	Confirmed
Phyllastrephus terrestris	LC	Medium
Phylloscopus ruficapilla	LC	Low
Phylloscopus trochilus	LC	Medium
Platalea alba	LC	Low
Plectropterus gambensis	LC	Medium
Plegadis falcinellus	LC	Low
Ploceus bicolor	LC	Low
Ploceus capensis	LC	Medium
Ploceus cucullatus	LC	High
Ploceus intermedius	LC	Low
Ploceus ocularis	LC	Confirmed

Ploceus subaureus	LC	Medium
Ploceus velatus	LC	Low
Ploceus xanthops	LC	Low
Pogoniulus pusillus	LC	Medium
Pogonocichla stellate	LC	Low
Polyboroides typus	LC	High
Porphyrio madagascariensis	LC	Medium
Prinia hypoxantha	LC	Low
Prinia subflava	LC	Confirmed
Prodotiscus regulus	LC	Medium
Psalidoprocne pristoptera	LC	Low
Psittacula krameri	LC	Low
Pternistis afer	LC	Low
Pternistis natalensis	LC	Medium
Pternistis swainsonii	LC	Low
Ptilopsis granti	LC	Low
Ptyonoprogne fuligula	LC	Low
Pycnonotus tricolor	LC	Confirmed
Quelea erythrops	LC	Low
Quelea quelea	LC	Medium
Rallus caerulescens	LC	Low
Rhinopomastus cyanomelas	LC	High
Riparia paludicola	LC	Medium
Riparia riparia	LC	Low
Sarothrura elegans	LC	High
Sarothrura rufa	LC	Low
Saxicola torquatus	LC	Medium
Scleroptila shelleyi	LC	Medium
Scopus umbretta	LC	High
Serinus canicollis	LC	Low
Spatula hottentota	LC	Low
Spatula smithii	LC	Low
Spermestes cucullata	LC	Confirmed
Spermestes nigriceps	LC	Low
Sphenoeacus afer	LC	Medium
Spilopelia senegalensis	LC	High
Stactolaema leucotis	LC	Low
Stephanoaetus coronatus	NT	Medium
Streptopelia capicola	LC	High

Streptopelia semitorquata	LC	High
Strix woodfordii	LC	Low
Sturnus vulgaris	LC	Medium
Sylvia borin	LC	Low
Sylvia nigricapillus	LC	Low
Sylvietta rufescens	LC	Medium
Tachybaptus ruficollis	LC	Low
Tachymarptis melba	LC	Low
Tadorna cana	LC	Low
Tauraco corythaix	LC	Low
Tchagra australis	LC	Low
Tchagra senegalus	LC	Medium
Tchagra tchagra	LC	Medium
Telophorus viridis	LC	Low
Telophorus zeylonus	LC	Low
Terpsiphone viridis	LC	High
Thalassornis leuconotus	LC	Low
Thamnolaea cinnamomeiventris	LC	Low
Threskiornis aethiopicus	LC	Low
Trachyphonus vaillantii	LC	High
Tricholaema leucomelas	LC	Medium
Tringa glareola	LC	Low
Tringa nebularia	LC	Low
Tringa stagnatilis	LC	Low
Trochocercus cyanomelas	LC	Low
Turdus libonyana	LC	Confirmed
Turdus litsitsirupa	LC	Low
Turdus olivaceus	LC	High
Turnix sylvaticus	LC	Low
Turtur chalcospilos	LC	High
Turtur tympanistria	LC	High
Tyto alba	LC	Low
Upupa Africana	LC	Medium
Uraeginthus angolensis	LC	High
Urocolius indicus	LC	Medium
Vanellus armatus	LC	Medium
Vanellus coronatus	LC	Medium
Vanellus melanopterus	LC	Low
Vanellus senegallus	LC	Low

Vidua funerea	LC	Medium
Vidua macroura	LC	High
Zapornia flavirostra	LC	Low
Zosterops virens	LC	High