September 2021

BIODIVERSITY AND TERRESTRIAL FAUNAL AND FLORA COMPLIANCE STATEMENT

for the

Proposed development of the Accurate Trading 47 (Pty) Ltd. truck stop and filling station in Pienaarsrivier, Bela-Bela Local Municipality, Limpopo.

Compiled for

Accurate Trading 47 (Pty) Ltd

Compiled by

EXIGENT

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DECLARATION OF INDEPENDENCE

I, Jacolette Adam (Exigent Engineering Consultants CC) declare that:

General declaration:

- I act as the independent specialist in this application;
- do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014, as amended;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I am aware that a person is guilty of an offence in terms of Regulation 48 (1) of the EIA Regulations, 2014, as amended, if that person provides incorrect or misleading information. A person who is convicted of an offence in terms of sub-regulation 48(1) (a)-(e) is liable to the penalties as contemplated in section 49B(1) of the National Environmental Management Act, 1998 (Act 107 of 1998).

Date: 18 September 2021

DATE	REVISION	STATUS	PREPARED BY	CHECKED AND APPROVED BY
18 September 2021	0	Approved for submission	Salona Reddy	Jacolette Adam (Pr. Sci. Nat., Reg number: 400088/02)

1. INTRODUCTION

Exigent Engineering Consultants CC (hereafter referred to as Exigent) has been appointed by Accurate Trading 47 (Pty) Ltd, to conduct the biodiversity, flora and faunal assessment for the proposed development of the Accurate Trading (Pty) Ltd. truck stop and filling station in Pienaarsrivier, on ERF 425 and 426 and portion 8 of the Farm Ruimte 74, within Pienaarsrivier, Limpopo.

According to Government Notice (GN) No. 960 which was published in Government Gazette (GG) No. 42561 of 05 July 2019, it is a requirement to submit a report generated by the national web-based environmental screening tool in terms of section 24(5)(h) of the National Environmental Management Act (NEMA), 1998 (Act No 107 of 1998) and regulation 16(1)(b)(v) of the Environmental Impact Assessment (EIA) Regulations, 2014, as amended. This GN came into effect from 4 October 2019. According to the results from the environmental screening assessment, a large portion of the site falls within a very high Terrestrial Biodiversity theme, high agriculture and animal species theme and medium plant species and palaeontology theme.

The Terrestrial Biodiversity theme was classified as a very high because the theme located the study area as a Critical Biodiversity Area 1 (CBA 1), Focus areas for land-based protected areas expansion and a vulnerable (VU) ecosystem. The agriculture theme was classified as high because of the land capability which scored a 9 and 10 as moderately high and the animal theme was classified as high as the theme indicated that there are three (3) sensitive species which may occur onsite. These species include Aves-*Circus ranivorus*, Aves-*Tyto capensis* and Sensitive Species 2. The plant theme was classified as medium as the theme indicated that there are two (2) sensitive species which may occur onsite. These species include *Cullen holubii* and Sensitive Species 1252.

GN No. 648 of 10 May 2019 prescribed procedures to be followed for the assessment and the minimum criteria for reporting of identified environmental themes in terms of Section 24(5)(a) and (h) of NEMA, when applying for Environmental Authorisation. In line with GN No. 1150 of 30 October 2020, Section 2.3, a terrestrial Animal Species Compliance Statement report will be submitted together with a Terrestrial Biodiversity Compliance Statement report in line with the Draft Ecosystem Environmental Assessment Guideline of July 2021.

2. DETAILS OF THE SPECIALISTS

Exigent was established in 1998 providing multidisciplinary engineering and environmental services. The Exigent Environmental Business Unit provides sustainable answers within an environmental developmental framework. Our foundations are built upon ecological principles with wide ranging expertise in environmental management and assessment processes. The qualifications and experience of the primary specialists and report compilers are listed in Table 2-1. The specialists' Curriculum Vitae are attached as Appendix A.

Table 2-1. Specialist details

Specialist and contact details	Qualifications	SACNASP Registration	Experience
Jacolette Adam Email: jacolette@exigent.co.za Mobile:082 852 6417	M.Sc. LLM (Environmental Law)	No: 400088/02	21 years of professional experience in the environmental sector and has been a certified Pr. Sci. Nat since 2002. She is also a Fellow member of the Water Institute of South Africa, Environmental Law Association of SA, the International Association for Impact Assessment South Africa and has successfully completed numerous specialist assessments throughout South Africa for a wide range of clients.
Salona Reddy Email: salona@exigent.co.za Mobile: 076 340 6234	B.Sc. Hons	Not registered	Salona has 4 years of work experience in the field of environmental management and ecological assessments. She obtained her BSc Hons in 2015 and is in the process of

			completing her MSc. She has been responsible for compilation of numerous EIA and EMPs for a wide range of clients.

3. PROJECT DESCRIPTION

The proposed project includes the construction of a Accurate Trading (Pty) Ltd. truck stop and filling station in Pienaarsrivier located on Erven 425 and 426 South East of the intersection of Catanho Street and the D626 within the jurisdiction of the Bela-Bela Local Municipality. The proposed development includes a new Filling Station and ancillary uses:

- The proposed filling station will have a canopy covered forecourt with a containment slab;
- 36 number of nozzles selling petrol and diesel fuels;
- two (2) 250m² Fast Food Outlets;
- Parking area
- Tank Farm storing 4 x 46 kℓ, resulting in 184 kℓ (183m³) of fuel being stored on site within the tank farm;
- Refuse area;
- Standby generator;
- Secure storage area for oil and related products;
- 2 ATM's
- Truckers seating area with bathroom.

Engineering services will be installed as per the specification of the Council. The development will see to the separation of potentially contaminated stormwater. This will form part of stormwater management plan to be approved. Access to the site will be from the D626.

4. PROJECT LOCATION

The proposed site to be extended is located on Erf 425, Erf 426 and portion 8 of the Farm Ruimte 74 within the area of Pienaarsrivier in the Limpopo province (Figure 4-1). The study area is calculated to be 19 056.7 m^2 (1.9 ha).

The development is proposed within the quarter degree grid cell 2528AB, quaternary catchment A23C, with the centre point geographical coordinates of the proposed development site situated at: (Table 4-1).

Table 4-1. Centre point coordinates of the proposed development.

LATITUDE/LONGITUDE	DEGREES	DECIMAL MINUTES
South	25	12.327
East	28	17.967

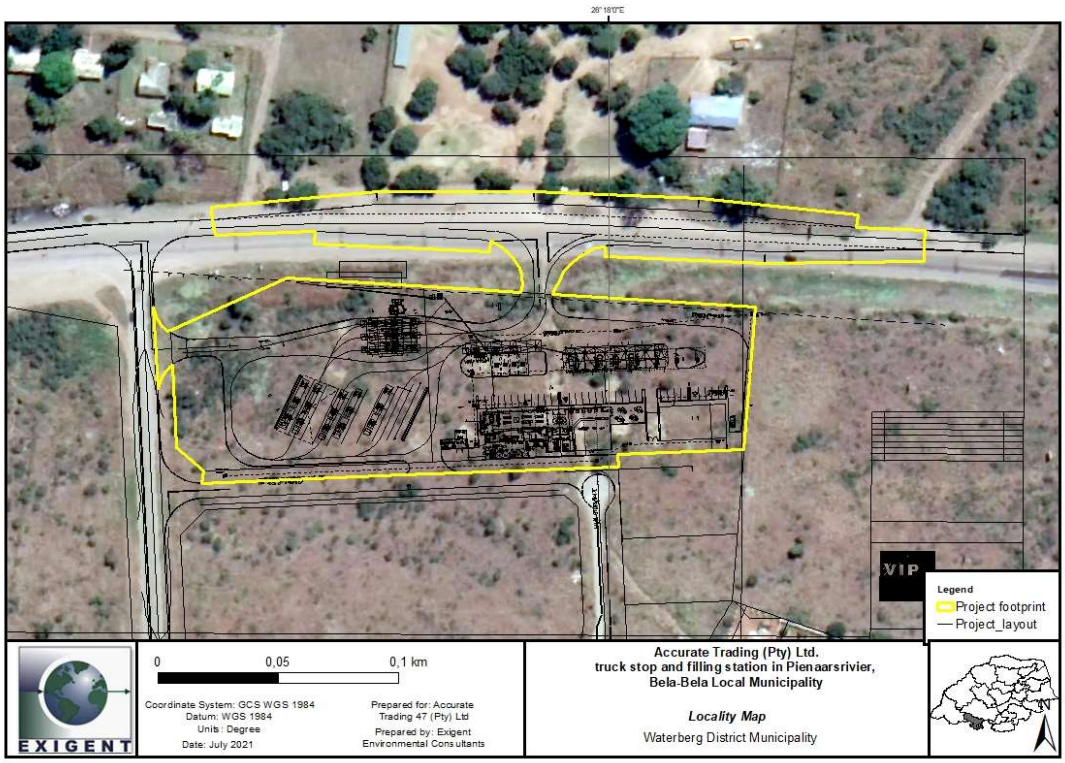

Figure 4-1. Locality of the proposed development area.

The 21-digit surveyor general (SG) code for the property is provided in Table 4-2 below:

Table 4-2. 21-digit Surveyor General code for the property affected by the proposed property.

Surveyor-general 21 digit site for the parent farm																				
T	0	J	R	0	0	0	0	0	0	0	0	0	0	7	4	0	0	0	0	0
T	0	J	R	0	0	0	0	0	0	0	0	0	3	7	1	0	0	0	2	8
Surveyor-general 21- digit site for the erf reference numbers for all sites																				
T	0	J	R	0	4	7	1	0	0	0	0	0	4	2	5	0	0	0	0	0
T	0	J	R	0	4	7	1	0	0	0	0	0	4	2	6	0	0	0	0	0
T	0	J	R	0	0	0	0	0	0	0	0	0	0	7	4	0	0	0	0	8

5. ASSUMPTIONS

It is assumed that all third-party information used was correct at the time of the compilation of the report. The survey was restricted to a single season (Summer), and it was not necessary to perform an additional survey in Spring.

In order to obtain a comprehensive understanding of the dynamics of the study area, as well as the status of endemic, rare or threatened species in any area, assessments should always consider investigations at different time scales (across seasons/years) and replication. However, due to time constraints, such long-term studies are not always feasible, and all conclusions represented herein will be based on a single field survey that was undertaken on 30 April 2021. The season of the site visit was during summer soon moving to Autumn. Given the nature of the area of the site 19 056.7 m^2 (1.9 ha) the mentioned SCC (species of conservation concern) are unlikely to occur within the study area.

6. RECEIVING ENVIRONMENT

6.1. Climate

The climate of the study area can be described as summer rainfall with very dry winters. The summers are long and warm and the winters are short, cool, dry and clear. The Mean Annual Precipitation (MAP) of the area is between 500 and 650 mm a year with frequent occurrences of frost in winter (Mucina & Rutherford, 2006). The average maximum temperature is 35.2°C and the minimum temperature is -2.0 °C for October and July. Corresponding values are 36.8°C and -1.2°C for January to June.

The rainy period of the year lasts for 7.5 months, from September 21 to May 4, with a sliding 31-day rainfall of at least 13 millimeters. The most rain falls during the 31 days centred around January 11, with an average total accumulation of 76 millimetres. The rainless period of the year lasts for 4.5 months, from May 4 to September 21. The least rain falls around July 19, with an average total accumulation of 1 millimetres (www.weatherspark.com)

6.2. Geology topography and soils

The proposed development is located within the Karoo Supergroup. The geology of the study area is mainly contributed by mafic volcanics, Letaba Formation, then the mudstones of the Irrigase Formation and the shale with sandstone units of the Ecca Group (Mucina & Rutherford, 2006). The soils are red-yellow apedal freely drained with high base status and self-mulching black vertic clays. The area is dominated by the Apedal Eutrophic Soils (Ae) described as freely drained, red, eutrophic, apedal soils comprise >40% of the land type (yellow soils comprise <10%) and Black and Red Clay Soils (Ea) land types ((Mucina & Rutherford, 2006).

6.3. Hydrology

The National Freshwater Ecosystems Priority Areas (NFEPA) used Water Source Areas (WSAs) to create a database that present various water and water related layers, including wetland delineation and vegetation data, catchment data, area of high groundwater recharge and water management areas using the criterion of the production of relatively large volumes of runoff which sustain lowland areas downstream. This work was then taken further in a study by the World Wide Fund for Nature – South Africa (WWF-SA) and the Council for Scientific and Industrial Research (CSIR) who identified 21 Strategic WSAs for surface water (SWSA-sw) which covered 8% of South Africa and supplied 50% of the mean annual runoff. More recently, the Water Research Commission (WRC) funded a study which identified water source areas for both ground and surface water resources (BGIS SANBI 2017). Strategic Water Source Areas (SWSAs) are now defined as areas of land that either:

(a) supply a disproportionate (i.e. relatively large) quantity of mean annual surface water runoff in relation to their size and so are considered nationally important; or

(b) have high groundwater recharge and where the groundwater forms a nationally important resource; or

(c) areas that meet both criteria (a) and (b). They include transboundary Water Source Areas that extend into Lesotho and Swaziland.

Based on the South African National Biodiversity Institute: Biodiversity Geographic Information System (BGIS SANBI) SWSAs database (2017) the study area is not strategically important for the water and economic security for South Africa.

6.3.1. Surface Water

The study area falls along the Apies-Pienaars tertiary catchment (A23) is highly developed and is comprised of eight quaternary catchments which cover an area of 4,446,504 km2 (As Gazetted on 16 September 2016). The study area lies within the Lower Pienaars sub water quaternary catchment A23C. The Pienaars, Apies, Moretele,

Hennops, Jukskei, Magalies and Elands rivers are the major tributaries of the Crocodile River which together make up the A20 tertiary drainage catchment, with 39 quaternary catchments. The Crocodile River contributes to the flow of the Limpopo River, which has an international river basin shared with Botswana, Zimbabwe and Mozambique. The rural parts of the Pienaars River sub-catchment (A23); the Lower Crocodile River (A24); and the Groot Marico (A3) economies are dominated by agriculture and eco-tourism activities (Department of Water Affairs, 2014).

The National Freshwater Ecosystem Priority Areas (NFEPA) database (2012) further identifies the wetland vegetation type as Central Bushveld Group 2. No NFEPA wetlands or rivers were identified within close proximity to the study area (within 500 m of the study area).

The Apies-Pienaars tertiary catchment has been highly developed. Groundwater resources in the catchment have been extensively utilised, by extensive livestock grazing by rural communities and possibly over-exploited by the dominating irrigation sector.

The study area is located 1.5 km from the Pienaars River. Rivers are an important habitat for birds in that they act as corridors of microhabitat for waterbirds, while the riparian vegetation on the banks provide cover for skulking species such as African Finfoot. The project does not impact directly on the river, as the riverine vegetation is located largely outside the study area. The site was however flagged as a river corridor because of this reason.

6.3.2. Ground Water

The groundwater recharge of South Africa has been mapped and distributed as part of the NFEPAs in 2011. This data aimed to provide the sub-quaternary catchments where the groundwater recharge was three-times higher than the average recharge ratio. Areas of high groundwater recharge are not necessarily classified as FEPAs, however they can be perceived as the 'recharge hotspots' of a region. It is critical to maintain the natural habitat in these areas of high groundwater recharge as to protect the functioning of the groundwater dependent ecosystems. Areas of groundwater recharge values higher than 300 indicate high groundwater recharge areas.

The study area falls within Crocodile (West) Marico Water Management Area (WMA). Groundwater forms an important feature with regard to water resources in the Crocodile River (West) Catchment. According to DWS (2009) a large dolomitic aquifer stretches along the southern parts of the catchment. Hence a significant volume of water is drawn for irrigation and other purposes from this aquifer, including a significant portion of the water supply to the City of Tshwane. The aquifer extends across the boundaries of the various WMAs in this area. The sandy aquifers occur along the Lower Crocodile River, from which large quantities of water are abstracted for irrigation. These aquifers are recharged from rainfall as well as river flow. The remainder of the catchment is mostly underlain by fractured rock aquifers, which are well utilised for rural community water supplies (DWA, 2009).

The study area has a groundwater recharge ratio of 6.2 Mm^3/a. The aquifer classification map of South Africa has indicated that the study area has been identified as a minor aquifer system. The water source in this area is surface water. According to the groundwater quality component in Table 6.1 of the National Water Act no. 36 of 1998 (Government Gazette no. 1050, 2 October 2020) the electrical conductivity of the groundwater in the Quaternary catchment A23C is 250 mS/m.

6.4. Vegetation

According to the National Vegetation Map (SANBI, 2018), the proposed project lies within the Springbokvlakte Thornveld vegetation type of the Central Bushveld Bioregion and the Savana Biome. Open to dense, low thorn savanna dominated by *Acacia* species or shrubby grassland with a very low shrub layer. Another defining characteristic of this thornveld are the heavy black turf and clay soils. The ecosystem occurs on flat to slightly undulating plains. The National Biodiversity Assessment (NBA,2018) lists the Ecosystem Threat status of the Springbokvlakte is rated as Vulnerable (VU) (Figure 8-3 and Figure 8-5) (Table 6-1).

Table 6-1. The key vegetation type present in the study area based on Mucina and Rutherford.

Vegetation type	Status (NSBA)*	Description
Springbokvlakte Thornveld	Vulnerable	Approximately 1% of this vegetation type is statutorily conserved in areas such as the Mkombo Nature Reserve. Approximately 49% of this vegetation type has been transformed, approximately 45% is cultivated and 3% urban and built-up. Very dense rural populations are in parts of the southern and eastern side of the unit. Moderate to low erosion. Alien plant infestations occurs in localised patches of high densities.

*National Spatial Biodiversity Assessment

The greatest threat to the conservation of this vegetation type is seen by agricultural development and industrial development.

Table 6-2 lists the species representative from the Springbokvlakte Thornveld.

Table 6-2. Dominant species representative from different stratums of the Springbokvlakte Thornveld type (Mucina & Rutherford, 2006).

Herbs	Graminoids
Aspilia mossambicensis	*Dichanthium annulatum (Forssk.) Stapf* var. *papillosum*
Psilocaulon parviflorum (Jacq.) Schwantes	*Ischaemum afrum (J.F.Gmel.)* Dandy
Nidorella hottentotica DC.	*Setaria incrassata (Hochst.)* Hack.
Orthosiphon suffrutescens (Thonn.) J.K.Morton	*Aristida canescens Henrard subsp. canescens*
Senecio linifolius L.	*Brachiaria eruciformis (Sm.)* Griseb.
Aspilia mossambicensis	*Mosdenia leptostachys* (B)
Nidorella hottentotica	*Aristida bipartite* (d)
Senecio apiifolius	*Aristida canescens*
Indigastrum parviflorum	*Brachiaria eruciformis*
Orthosiphon suffrutescens	*Dichanthium annulatum var. papillosum* (d)
	Ischaemum afrum (d)
	Setaria incrassate (d)
Small Trees	**Tall shrubs**
Boscia foetida subsp. rehmanniana	*Rhus engleri*
Acacia karroo	*Tarchonanthus*
Acacia luederitzii var. retinens	*camphoratus*
Acacia mellifera subsp. Detinens	*Diospyros lycioides subsp.*
Acacia nilotica	*lycioides*
Acacia tortilis subsp. heteracantha	*Euclea* undulata (d)
Ziziphus mucronate	*Dichrostachys cinerea*
	Grewia flava
Low Shrubs	**Succulent Shrubs**
Acacia tenuispina (d)	*Kleinia longiflora*
Ptycholobium plicatum	

7. METHODOLOGY

7.1. Desktop site verification

Prior to conducting the physical study area visit, an initial level 1 (desktop) survey was done using Google Earth's map timeline function to detect changes in visible vegetation gradients. Maps are available from 2004-2021. Possible sensitive features were identified, and GPS coordinates were noted to assist with the study area visit.

7.1.1. Literature and database survey

A literature survey was conducted to assist with the study. The full reference to resources used is listed in Section 14.

Relevant resources included:

- VEGMAP (2018);
- National Spatial Biodiversity Assessment (2018);
- Red Data Animal Lists; and
- Various field guides and books.

7.1.2. Local databases

As per the zoning allocation of the Bela-Bela Local Municipality, the proposed project has been zoned in the Environmental Management Framework (EMF, 2014) for the Waterberg Local Municipality as Zone 9: Agriculture focus areas with a tourism component surrounded by natural areas (Figure 7-1).

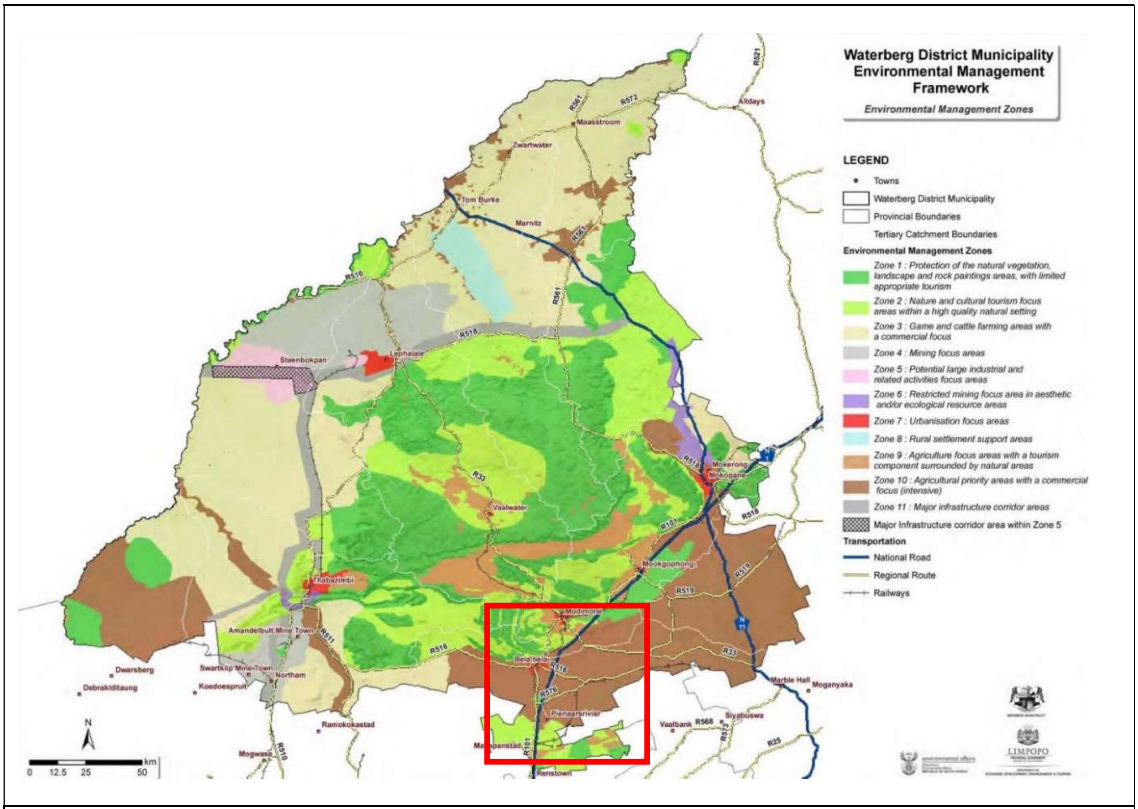

Figure 7-1. Waterberg Environmental Management Framework (2014) map for the area.

7.1.3. Provincial databases

The Limpopo Conservation Plan (C-plan) Version 2 (2018) focuses on three key area:

1. Climate change: The plan identifies a comprehensive terrestrial and riverine corridors to ensure linkages are retained between key biodiversity features; areas supporting climate change resilience (e.g. refuge habitats and areas with diverse bioclimatic variables) were identified and included as features in the plan; and other features such as ridges which include important environmental gradients and linkages were included in the plan.
2. Hydrological processes: Key wetland and river systems are include in the plan. In addition, targets were set for identified priority freshwater catchments and dolomite systems.
3. Species requirements: Area requirements for each of the threatened species include in the plan were identified and incorporated into the plan.- Biodiversity targets - quantitative targets are set for both biodiversity pattern and process features indicating how much of each feature is required to insurer presentation and persistence.

The Limpopo C-Plan was used during a Geograohic Information System (GIS) assessment of the study area. The Limpopo C-Plan V2 (2018) delineates (at approximately 1:50 000 scale) biodiversity priority areas called Critical Biodiversity Areas (CBA), Ecological Support Areas (ESA) and Protected Areas (PA). The Limpopo C-Plan was consulted for the compilation of this report. Results indicates that the study area is within a CBA 1 in an undeveloped area (as can be seen on the aerial image) (Figure 8-4).

The province of Limpopo includes four categories for the National Protected Area Expansion Strategy such as Protected Areas (PAs) , Negotiated Areas, Priority Areas and Ecosystems (NPAES) where targets are not met (DEA, 2016). The study area is classified as a Priority focus (PFAs) area. The main biodiversity features are under-protected terrestrial and freshwater ecosystems, landscape corridors and major areas important for threatened species. These areas are often pressured by cultivation and land degradation (often associated with former homeland areas) these are consistent issues across many of the priority areas, while plantations and mining are locally very significant (DEA, 2016). Although the study area is classified as a Priority focus area the study site is highly disturbed and fragmented. The surrounding area provides no corridor for species movement nor any suitable habitat for important or threatened species.

7.1.4. National databases

The Integrated Biodiversity Information System (SIBIS) database from the South African National Biodiversity Institute (SANBI) contains information from several SANBI databases, namely:

- Acocks (plant species observations);
- Custodians of Rare and Endangered Wildflowers (CREW) (threatened plant species localities);
- DNA laboratories (plant and reptile DNA accessions);
- Garden Accessions (plant collection records);
- MSB (plant seed collection records);
- National Herbarium Pretoria (PRE) Computerised Information System (PRECIS) (taxonomy and herbarium specimens);
- Species Status (NEMBA-listed species);
- TSP (threatened plant species);

- National Freshwater Ecosystems Priority Areas (NFEPA) – (Nel *et al*., 2011). This mapping product highlights potential rivers and wetlands that should be earmarked for conservation on a national basis; and
- National Spatial Biodiversity Assessment.

The SIBIS database provides information of the IUCN Red List status, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix listing or TOPS status of the study area, on an interactive map. The NFEPA database includes various water and water related layers, including wetland delineation and vegetation data, catchment data, area of high groundwater recharge and water management areas. Based on National Biodiversity Assessment classification, the entire study area falls within a **NEMBA listed vulnerable ecosystem** known as the **Springbokvlakte Thornveld.** Although the study area is classified as a vulnerable ecosystem the study site is highly transformed not clearly indicating a vulnerable ecosystem. The study site is classified as poorly protected within the terrestrial threat status.

7.2. Vegetation

Prior to the site investigation, the development site was stratified into relatively homogeneous vegetation/habitat units based on the morphology of the terrain and the growth-form of the vegetation. This was done with the help of 1:50 000 topographical maps and Google earth aerial photos of the development site. The physical site survey was conducted on 30 April 2021, as required for species identification. Species lists were compiled during the site visits to ensure that representative species observed were captured. The species listed within the findings of the screening tool were also searched for during the site visit.

Faunal distribution data were obtained from various available databases, publications and field guides to ascertain the historical occurrence of species within 2528AB.

7.2.1. Vegetation Sensitivity Summary

A summary of environmental sensitivity information provided above is listed in Table 7 1 below.

Table 7-1. Summary of environmental sensitivities in the project area.

Database	Importance	Criteria	Pienaarsrivier
National vegetation types	Savanna	Least concern	A common vegetation unit
	Central Bushveld	Least concern	A common vegetation unit
Provincial vegetation types	Springbokvlakte Thornveld	Least concern	Not in study site
NFEPA	N/A	N/A	Not in study site
PA Expansion Focus area	N/A	N/A	Not in study site
IBA	N/A	N/A	None close to site
Provincial CBA	Vegetation types and protection of species	CBA 1	Most of the site is considered CBA 1.
	Vegetation types and protection of species	CBA 2	A small section of the site is considered CBA 2.
Provincial ESA	N/A	N/A	None close to site
Threatened Ecosystems	Springbokvlakte Thornveld	Vulnerable	N/A
Landscape corridors	Pienaars river	Least Concern	River located 1.5 km from the study site

7.3. Calculating the Project Area Of Influence (PAOI)

The following steps were followed in calculating the Project Area of Influence (PAOI):

1. The project activities interaction with the flora of the region assessed based on the following sources:

a. SA National Land Cover (BGIS 2014);

b. National Spatial Biodiversity Assessment (2018);

c. National Freshwater Ecosystems Priority Areas (NFEPA) – (Nel *et al*., 2011);

d. South African Inventory of Inland Aquatic Ecosystems (SAIIAE, 2018); and

e. Previous specialist assessments for the project area.

2. Calculate how far the project activities could influence on the vegetation communities.

7.4. Evaluation of Site Ecological Importance

SANBI (2020) defines Site Ecological Importance (SEI) as a function of the *Biodiversity Importance (BI)* of the receptor, which is either defined as the species of conservation concern, or fir instance a faunal community or habitat type present on the site), and its resilience to impacts, *Receptor Resilience (RR),* and is then calculated as follows:

$$SEI = BI + RR$$

BI is the function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor and is calculated as follows:

$$BI = CI + FI$$

7.5. Conservation Importance

CI is evaluated in line with the various internationally accepted principles and criteria for the determination of biodiversity-related value, including the IUCN Red List species, Red list of Ecosystems and the Key Biodiversity Areas (KBA)of the IUCN (IUCN 2016).

This CI evaluation is based on the following criteria:

1. **IUCN Threatened and Near Threatened Species** (CR, EN, VU & NT) on a national or global scale as per the IUCN criteria (www.iucnredlist.org). The Guideline states that should the national and global assessment status differ for the same taxon, the most recent evaluation of status should be used in the SEI calculation.

2. **Rare species** as included on the South African National Red List as Rare of Critically Rare or Extremely Rare. These species are highly restricted even though not currently declining. Should a proposed development impact on a population of these species they will quality under an IUCN category of threat.

3. **Range-restricted species** – the presence of terrestrial fauna, flora with a global population Extent of Occurrence (EOO) of 10 000km^2 or less.

4. **Globally significant populations of congregatory species** - a roughly estimated proportion (%) of the global population of a fauna species that congregate for breeding/feeding/hibernation/ other reasons;

5. **Significant areas of threatened vegetation types** – function of both the size being considered in relation to the total extent of that vegetation type (i.e. proportion) and how threatened (CR, EN, VU) the vegetation types are;

6. **Natural processes** – natural unmanaged areas with low levels of ecological disturbance have largely intact natural processes such as pollination, seed dispersal and migration, and thus have greater intrinsic conservation importance than those modified through ecological disturbance.

In calculating the CI, the criteria as set out below in Table 7-2 has been implemented.

Table 7-2. Conservation Importance Criteria

Conservation Importance	Fulfilling Criteria
Very High	Confirmed or highly likely occurrence of CR, EN, VU, extremely rare[1], critically rare[2], species that have a global EOO <10km^2 Any area of natural habitat or a CR ecosystem or large area (>0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type Globally significant populations of congregatory species (>10% of the global population)
High	Confirmed or highly likely occurrence of CR, EN, VU, extremely rare, critically rare, species that have a global EOO >10km^2 IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A. If listed only under Criterion A, include if there are less than 10 locations or <10 000 mature individuals remaining. Small area (>0,01% but smaller than (>0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (>0,01%) of natural habitat of VY ecosystem type Presence of Rare species Globally significant populations of congregatory species (>1% but <10% of the global population)
Medium	Confirmed or highly likely occurrence of populations of NT species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals. Any area of natural habitat of threatened ecosystem type with status of VU Presence of range-restricted species >50% of receptor contains natural habitat with potential to support SCC
Low	No confirmed or highly likely populations of SCC No confirmed or highly likely populations of range-restricted species <50% of receptor contains natural habitat with limited potential to support SCC
Very low	No confirmed and highly unlikely populations of SCC No confirmed and highly unlikely populations of range-restricted species No natural habitat remaining

[1] Applicable to butterflies (as per Mecenero *et al* 2013)
[2] Applicable to plants (as per Raimondo *et al* 2009)

7.6. Functional Integrity

Functional Integrity (FI) of the receptor[3], used as the vegetation/faunal community or habitat type) is defined as the receptor's ability to maintain the structure and functions that define it, compared to its known or predicted state under ideal conditions. In calculating the FI, the criteria as set out below in Table 7-3 has been implemented.

Table 7-3. Functional Integrity Criteria

Functional Integrity	Fulfilling Criteria
Very High	Very large (>100ha) intact area for any conservation status of ecosystem type or >5ha for CR ecosystem types High connectivity serving as functional ecological corridors, limited road network between intact habitat patches No or minimal criteria negative ecological impacts with no signs of major past disturbances
High	Large (>20ha, but <100ha) intact area for any conservation status of ecosystem type or >10ha for EN ecosystem types Good habitat connectivity with potential functional ecological corridors and a regularly used road network between habitat intact patches Only minor current negative ecological impacts with no signs of major past disturbance (e.g. ploughing) and good rehabilitation potential
Medium	Medium (>5ha but <20ha) semi-intact area for any conservation status of ecosystem type or >20ha for VU ecosystem types Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches Mostly minor current negative ecological impacts with some major impacts (e.g. established population of alien and invasive flora) and a few signs of past disturbance with moderate rehabilitation potential
Low	Small (>1ha but <5ha) area Almost no habitat connectivity but migrations still possible across some transformed or degraded natural habitat and a very busy used road network surrounds the area. Low rehabilitation potential. Several minor and major current negative ecological impacts.
Very low	Very small <1ha area No habitat connectivity except for flying species or flora with wind dispersed seeds. Several major current negative ecological impacts.

[3] Defined as the measure of ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts.

7.7. Biodiversity Importance

Based on the above criteria, the BI is then calculated as per the matrix below.

Biodiversity Importance		Conservation Importance				
		Very High	**High**	**Medium**	**Low**	**Very Low**
Functional Integrity	**Very high**	Very High	Very High	High	Medium	Low
	High	Very High	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	Low	Medium	Medium	Low	Low	Very low
	Very low	Medium	Low	Very low	Very low	Very low

7.8. Receptor Resilience

The Receptor Resilience (RR)[4] is based on the estimated recovery time to restore an appreciable portion of the functionality of the receptor. These resilience aspects should be evaluated based on the specific conditions, such as large birds of prey having different resilience levels to noise disturbances based on the breeding cycle.

The RR is calculated based on the criteria as set out in Table 7-4.

Table 7-4. Receptor Resilience Criteria

Receptor Resilience Criteria	Fulfilling Criteria
Very High	Habitat that can recover rapidly (less than 5 years) to restore >70% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that might have a very high likelihood of returning to a site once the disturbance has been removed.
High	Habitat that can recover relatively quickly (5 -10 years) to restore >70% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that might have a high likelihood of returning to a site once the disturbance has been removed.

[4] Intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention

Receptor Resilience Criteria	Fulfilling Criteria
Medium	Will recover slowly (more than 10 years) to restore >70% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that might have a moderate likelihood of returning to a site once the disturbance has been removed.
Low	Habitat that is unlikely to be able to recover fully after a long period: >15 years required to restore less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of remaining at a site even when a disturbance or impact is occurring, or species that might have a low likelihood of returning to a site once the disturbance has been removed.
Very low	Habitat that is unable to recover from major impacts, or species that are unlikely to remain at a site even when a disturbance or impact is occurring, or species that are likely to return to a site once a disturbance or impact has been removed.

Based on the above criteria, the SEI is then calculated as per the matrix below.

Site Ecological Importance		Biodiversity Importance				
		Very High	**High**	**Medium**	**Low**	**Very Low**
Receptor resilience	**Very high**	Very High	Very High	High	Medium	Low
	High	Very High	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	Low	Medium	Medium	Low	Low	Very low
	Very low	Medium	Low	Very low	Very low	Very low

The SEI is then interpreted based on the guideline as set out in Table 7-5.

Table 7-5. Interpretation of Site Ecological Importance

Site Ecological Importance	Fulfilling Criteria
Very High	Avoidance mitigation - No destructive development activities should be considered. Offset mitigation not possible as this would be the last remaining species/good patches

Site Ecological Importance	Fulfilling Criteria
	of habitat/unique species assemblages. Destructive impacts for species/ecosystems where persistence target remains.
High	Avoidance mitigation whenever possible - Minimization mitigation. Changes to project infrastructure design to limit the amount of habitat impacted. Limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.
Medium	Minimization and restoration mitigation - Development activities of medium impact acceptable followed by appropriate restoration activities.
Low	Minimization and restoration mitigation - Development activities of medium to high impact acceptable followed by appropriate restoration activities.
Very low	Minimization mitigation - Development activities of medium to high impact acceptable and restoration activities may not be required.

The combination of SEI for various taxon into a single SEI for the PAOI can be done by means of ad hoc combining the maximum SEI for each receptor, or via an evaluation of the SEI once per receptor for all necessary taxon, but in these instances the highest CI, FI and lowest RR ratings across all taxon should be applied.

7.9. Desktop Site Verification for species of conservation concern

7.9.1. TOP species Desktop Lists for the Development Area

In addition to the species identified in the National Department of Environmental Affairs' (DEA) screening tool and those identified by the Department of Economic Development , Environment and Tourism (DEDET), the National Environmental Management: Biodiversity Act (Act No. 10 of 2004, NEMBA) Threatened or Protected Species (TOPS) species were also considered for the proposed development. TOP species were identified in terms of the threatened and protected species lists as published under the NEMBA GN 151 of 2007 (GN151, 2007). The International Union for Conservation of Nature and Natural Resources (IUCN) Red-list species for South Africa were also consulted for the distribution and status for mammals, reptiles, and invertebrates. Where variation occurred, this was indicated on the list.

7.9.2. Species of special concern

The available habitat on the development site was compared to the habitat requirements of Species of Special Concern (SOSC) potentially occurring in the study area as determined from the literature review. Based on this assessment, SOSC with a probability of occurring on the development site were identified.

7.9.3. Red data listed species

South Africa is a signatory to the United Nations Convention on Biological Diversity (1992) and, as such, needs to conserve biological diversity, promote the sustainable use of biological diversity, and ensure the fair and equitable sharing of benefits arising out of the utilisation of genetic resources. Principle 4(a) of the NEMA states that disturbance to ecosystems and loss of biodiversity should be avoided, minimised and remedied.

To promote the conservation of biodiversity, species of concern have been identified by the World Conservation Organisation (IUCN) Red Data lists which they feel require protection (Hilton-Taylor, 1996; IUCN 2002). The World

Conservation Organisation (IUCN) has three threatened categories, namely Critically Endangered, Endangered and Vulnerable. Species that have been evaluated according to the IUCN criteria and do not fall into one of the threatened categories can be classified as Least Concern, Near Threatened or Data Deficient (Minter *et al.,* 2004; Hilton-Taylor, 1996):

Extinct: The species are presumed extinct when extensive surveys have failed to record an individual. Surveys should be in known and expected habitat, at appropriate times and throughout its historic range.

Extinct in the Wild: Exhaustive surveys in known and expected habitat, at appropriate times and throughout its historic range have failed to record an individual. Populations occur well outside the past range, in cultivation or in captivity.

Critically Endangered (CR): Species facing an extremely high risk of extinction in the wild.

Endangered (EN): These taxa are in danger of extinction and are unlikely to survive if the current situation continues.

Vulnerable (VU): Vulnerable species are facing a high risk of extinction in the wild. Vulnerable species are taxa that are likely to move into the Endangered category in the near future if the factors causing the decline to continue to be present.

Near Threatened (NT): Species are classified as Near Threatened when they do not meet the criteria for the threatened categories but are close to classifying as Threatened or will likely classify as Threatened in the near future.

Data Deficient (DD): A species is classified as a Data Deficient when there is a lack of appropriate data on the distribution and/or population status of the species. The species may be well studied, and the biology known, but data on the abundance and/or distribution are not available. The category indicates that more data are required and that there is a possibility that the species may be classified into one of the threat categories in the future.

Least Concern (LC): Species that are widespread and abundant are normally included in this category

8. SITE VERIFICATION AND RESULTS FOR BIODIVERSITY ASSESSMENT

8.1. Site Verification Method

A single field survey that was undertaken on 30 April 2021 for a duration of 8 hours. The season that the field survey was conducted was toward the end of Summer. Due to the highly transformed nature of the PAOI, seasonality of the survey is not considered to be an essential factor for the detection of terrestrial Biodiversity Priority Areas (BPAs).

The specialist investigated the study area on foot during a the 8 hours. The entire site of 1.9 ha was surveyed on foot to locate and characterise habitats. Photographs were taken and the assessment of the likelihood of any terrestrial ecosystems and BPAs being present was conducted. The terrestrial ecosystems observed on site were captured using a Samsung Galaxy A70. Habitat characteristics and the likelihood of terrestrial ecosystem BPAs found on site is provided in Figure 8-1 and Figure 8-2.

8.2. Site Verification result

The land uses in and surrounding the development footprint includes low density residential, light industrial, a main road and a paved pathway. As seen in Figure 4-1 above, significant areas of interest include the South African Police Services, Pienaarsriver Primary School and the Pienaarsriver SaveMor.

Pre-existing impacts in the development area includes, the main road bordering the site, the paved pathway and illegal dumping are located within the site area. The site is made up of the encroachment of various alien species and grass tufts which are a result of an area surrounded by impacts. The vegetation throughout the Google Earth historical imagery (Accessed on 10 September 2021) remains untouched with the surrounding impacts being the only impacts.

Current impact on the site includes the encroachment of alien species, the main road and the paved pathway. Numerous footpaths intercept the development site. The access roads as well as all areas within close proximity to them has been completely transformed (Figure 8-1 and Figure 8-2). The Site Area is calculated to be 19056.7 m^2 (1.9 ha) of the 1.9 ha. Within this area 14926 m^2 (1.49 ha) will be cleared and construction will take place in the form of landscaping and infrastructure.

The vegetation of the study area is mostly transformed as most of the study area is surrounded and includes existing infrastructure in the form of roads. The vegetation located in the road reserve varies from highly modified ti moderately modified. The areas which are classified in Figure 8-2 as open veld are characteristic of mixed bushveld.

(a)

(b)

(c)

(d)

(e)

(f)

Figure 8-1. Land-uses and impacts along the proposed development site: a) Main Road; b-e) The site represents the Springbokvlakte Thornveld vegetation type; e) The paved pathway; f) Illegal dumping on site (Source: van der Walt' 2021)

The site remained uniform across the 1.9 ha area and was described as open veld and there was no formal landuse located on site. The dominant species located within the PAOI is described in Section 10.3. Within the study area 195 m^2 is an existing paved road, 5968 m^2 is an existing main road, 12086 m^2 is classified as open veld and 807 m^2 is existing road servitude. Of the total site 6970 m^2 (31%) is already constructed and transformed leaving the remaining 12086 m^2 classified as open veld.

Figure 8-2. Existing Landuse within the Area of Influence.

8.3. Terrestrial ecosystems and Ecological processes within the PAOI

The PAOI was calculated as per Table 8-1 below. The PAOI was calculated as the actual footprint of the proposed activities including the construction footprint.

Table 8-1. Area calculations for the PAOI (Pienaarsrivier)

PAOI	Area (ha)	Description	Probability
Primary	**1.9**	**Actual infrastructure footprint including the proposed construction footprint area.**	**Definite**
TOTAL	**1.9**		

The PAOI has been studied using various key references and resources. The PAOI is located within the Springbokvlakte Thornveld (Figure 8-3) (VEGMAP, 2018). The Springbokvlakte Thornveld is classified as vulnerable (Figure 8-5) (VEGMAP, 2018).

The PAOI falls within a Critical Biodiversity Area 1 (CBA 1) and Critical Biodiversity Area 2 (CBA 2) category (Figure 8-4). A CBA1 is defined by either the site being on an area that is irreplaceable and is essential for meeting biodiversity targets and the second is that it forms critical linkages in the provincial biodiversity corridor network where existing conversion of natural landscapes to other uses has severely restricted options for maintaining

connectivity in the natural landscape (LEDET, 2018). There are few or no alternative sites where these features occur or targets for the features present can be achieved (LEDET, 2018).

A CBA2 is defined as areas which are usually identified in existing plans, which were selected as the best option for meeting biodiversity targets which are based on complementary, efficiency and avoidance of conflict with other land uses (Figure 5-3) (LEDET, 2018). The features represented in CBA2 areas are more widespread or not threatened and there are choices as to where in the landscape targets for these features can be achieved. These are considered "optimal" sites as there are alternative sites available to meet targets, however, CBA2 sites are the best sites due to (1) their spatial location relative to other CBAs; and, (2) they have the lowest conflict with opposing land uses. Generally, only areas that are natural or near-natural are identified as CBAs (LEDET, 2018).

Understanding CBAs and their function and with the consultation of ecosystem Biodiversity Priority Areas, Provincial and all relevant Bioregional/Biodiversity Sector and Ecosystem Management Plans the site is observed to be highly fragmented and has low ecological connectivity.

Land Cover Maps and Protected Areas was also consulted to determine if the PAOI was located with an area of concern however the results indicate that the PAOI does not fall in a protected area (Figure 8-6).

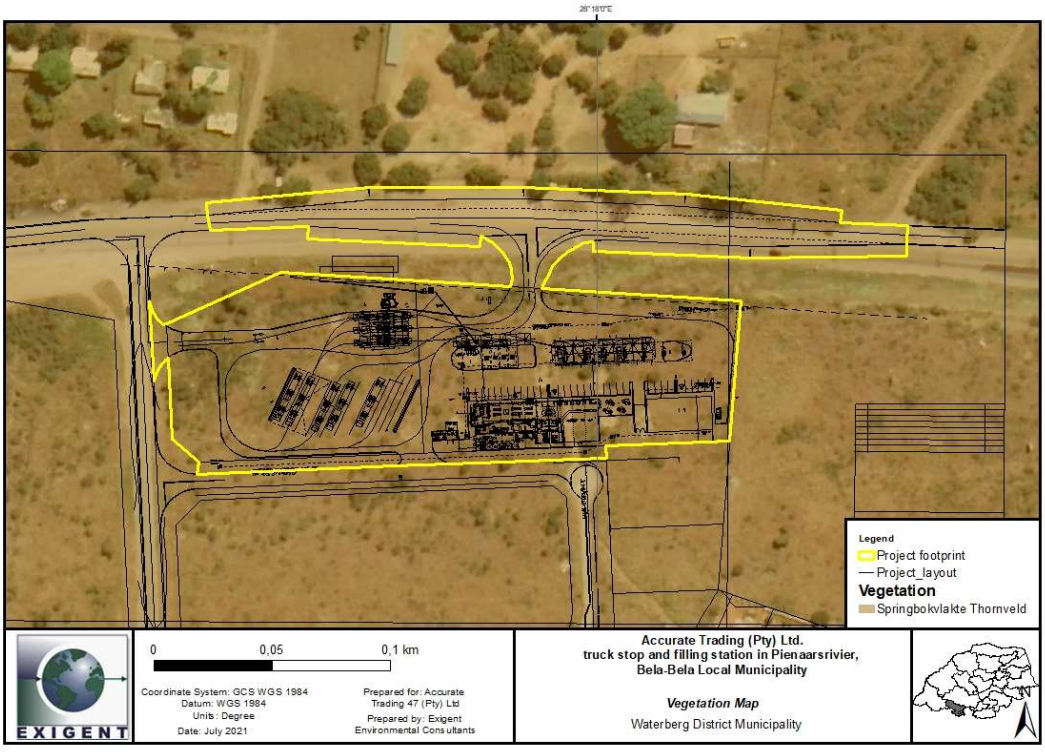

Figure 8-3 Vegetation of the study area (VEGMAP, 2018).

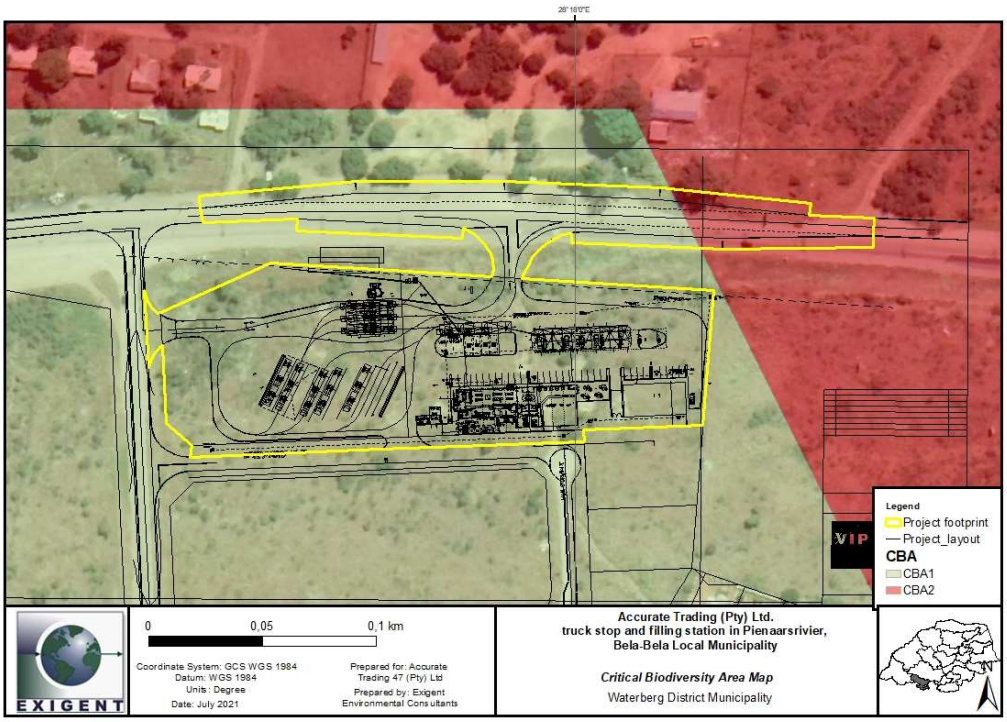

Figure 8-4. Limpopo Conservation Plan V2 (Limpopo C-plan, 2013).

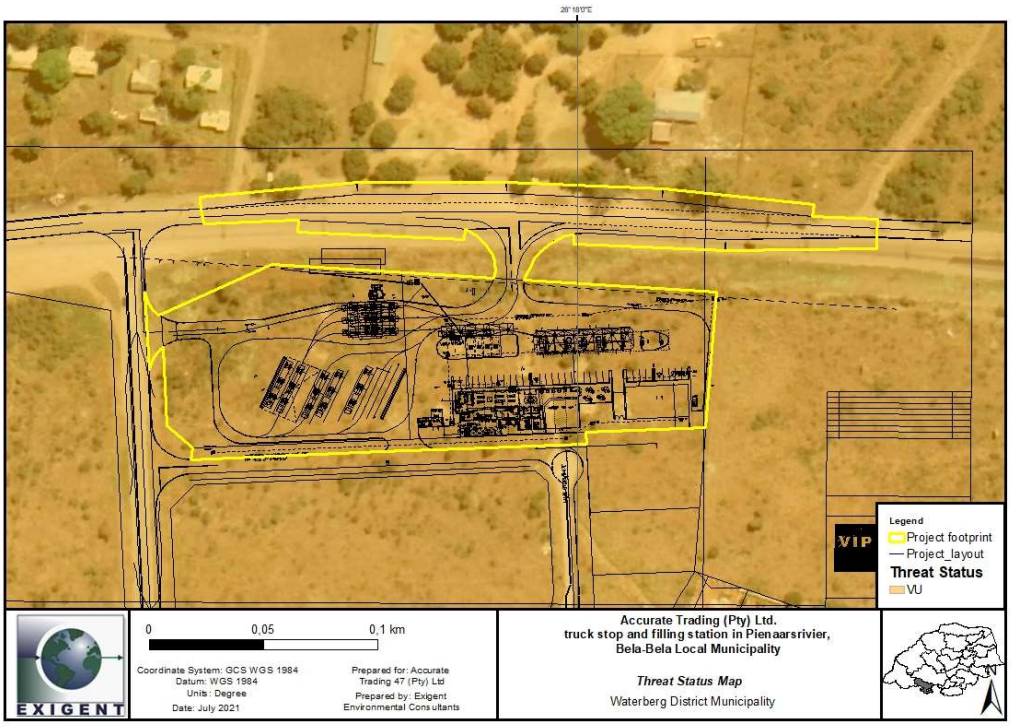

Figure 8-5. Threat Status of the study area (VEGMAP, 2018).

Figure 8-6. Protected Areas (Protected Areas Register, 2021).

8.1. Expected Ecological Condition

Table 8-2. Combined SEI for the Coastal Infrastructure Assessment in Pienaarsrivier

Habitat	Conservation Importance	Functional Importance	Receptor Resilience	Biodiversity importance	Site Ecological Importance
Open Veld	**Low**	**Low**	**Very High**	**Low**	**Medium**

The expected ecological condition was determined using a coalition of desktop ecological conditions and level of degradation of ecosystems within the PAOI. From the observation at a desktop level, it is important to note the various surrounding impacts which already exist and have existed through time. This included the SA Vegetation Map, Provincial Spatial Biodiversity Plans, Bioregional Plans, Land cover maps, Topographical Maps, recent historical aerial photography, Google Earth, Satellite imagery and Contour lines.

Based on the various databases it can be seen that the PAOI has been transformed and disturbed over time. The expected ecological condition from a desktop level was determined to be low when considering the various surrounding impacts and where the PAOI is placed.

8.2. Biodiversity Priority areas

Although the site falls within CBA1 and CBA2 the PAOI existing landuse has been classified initially at a desktop level and later verified by a site inspection. The PAOI is made up of a vegetation type which is observed to have been disturbed over time through fire and existing infrastructure like a paved road and a main road and a section which represents the road servitude. The vegetation throughout the site is uniform and does not present much change across the area. The BPAs (SANBI), Landcover Maps (SANBI), various topographic maps, recent and historical imagery, Google Earth, Satellite imagery and contour lines were consulted in determining if the PAOI and surrounding landscape represents any biodiversity priority areas. After consultation of these various datasets it was determined that no biodiversity priority areas exist within the PAOI.

9. PROPOSED IMPACT MANAGEMENT ACTIONS

The methodologies as stipulated by the Draft Ecosystem Environmental Assessment Guideline are described below. These methodologies have been applied to assess the impacts for the proposed housing development and services.

The impact assessment will focus on the direct and indirect impacts associated with the project. All impacts will be analysed with regards to their extent, intensity, duration, probability, and significance.

The significance of potential impacts that may result from the proposed project will be determined to assist decision-makers (typically by a designated authority or state agency, but in some instances, the proponent).

The significance of an impact is defined as a combination of the consequence of the impact occurring and the probability that the impact will occur.

The criteria used to determine impact consequence are presented in the table below.

Rating	Definition of Rating	Score
Extent – Physical extent or spatial scale of the impact		
Local	Confined to project or study area or part thereof (e.g. the development site and immediate surrounds)	1
Regional	The region (District Municipality or Quaternary catchment)	2
National	Nationally or beyond	3
Intensity – Impact would be destructive or benign		
Low	Site-specific and wider natural and/or social functions and processes are negligibly altered	1
Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way	2
High	Site-specific and wider natural and/or social functions or processes are severely altered	3
Duration – Timeframe in which the impact would occur		
Short Term	Up to 2 years and reversible	1
Medium Term	2 to 15 years and reversible	2
Long Term	More than 15 years and irreversible	3

The combined score of these three criteria corresponds to a Consequence Rating, as follows:

Combined Score	3-4	5	6	7	8-9
Consequence Rating	Very Low	Low	Medium	High	Very High

Once the consequence is derived, the probability of the impact occurring is considered, using the probability classifications presented in the table below.

Probability – Likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Possible	40% – 70% chance of occurring
Probable	<70% – 90% chance of occurring
Definite	> 90% chance of occurring

The overall significance of impacts is determined by considering consequence and probability using the rating system prescribed in the table below:

		Probability			
		Improbable	**Possible**	**Probable**	**Definite**
Consequence	**Very low**	Insignificant	Insignificant	Very low	Very low
	Low	Very low	Very low	Low	Low
	Medium	Low	Low	Medium	Medium
	High	Medium	Medium	High	High
	Very high	High	High	Very high	Very high

Finally, the impacts are also considered in terms of their status (positive or negative impact) and the confidence in the ascribed impact significance rating. The prescribed system for considering impacts status and confidence (in assessment) is laid out in the table below:

Status of impact	
Indication of whether the impact is adverse (negative) or beneficial (positive)	+ ve (positive – a 'benefit')
	– ve (negative – a 'cost')
Confidence of assessment	
The degree of confidence in predictions based on available information, Hatch's judgment and / or specialist knowledge	Low
	Medium
	High

The impact significance rating should be considered by authorities in their decision-making process based on the implications of ratings ascribed below:

- **Insignificant**: Potential impact is negligible and will not have an influence on the decision regarding the proposed activity / development.
- **Very low**: Potential impact is very small and should not have any meaningful influence on the decision regarding the proposed activity / development.
- **Low**: Potential impact may not have any meaningful influence on the decision regarding the proposed activity / development.
- **Medium**: Potential impact should influence the decision regarding the proposed activity / development.
- **High**: Potential impact will affect the decision regarding the proposed activity / development.
- **Very high**: Proposed activity should only be approved under special circumstances.

Practicable mitigation and optimisation measures are recommended and impacts are rated in the prescribed way, both without and with the assumed effective implementation of mitigation and optimisation measures. Mitigation and optimisation measures are either:

- **Essential**: Measures that must be implemented and are non-negotiable
- **Best Practice**: Recommended to comply with best practice, with adoption dependent on the proponent's risk profile and commitment to adhere to best practice, and which must be shown to have been considered and sound reasons provided by the proponent if not implemented.

The assessment of impacts adheres to the minimum requirements in the EIA Regulations and takes into account applicable official guidelines.

9.1. Project Impact Assessment

The following key issues have been identified and assessed during this biodiversity impact assessment:

- Impact on Critical Biodiversity Areas with specific reference to species composition, diversity and structure, ecosystem status and species of special concern;
- Impact on Ecological Support Areas in terms of ecological processes, functionality and loss of corridors;
- Impact on Protected Areas extent and potential loss of expansion areas;
- Impact on habitat, water quantity and quality of Strategic Water Source Areas; and
- Impact on the extent and integrity of indigenous forests with reference to potential loss.

It should be noted that the proposed layout of infrastructure has been amended after discussions with key stakeholders and interested parties, as well as specialists to minimise the impacts. This impact assessment is therefore based on the preferred alternative layout option which minimises the impacts on the ecological features of the study area.

9.1.1. Impact on Terrestrial Critical Biodiversity Areas (CBAs)

The PAOI was identified as CBA1 and CBA2 because of the following reasons:

- The potential that species of conservational concerns may be located within the area. These species include the African Finfoot, African Grass-Owl, African Marsh-Harrier, Lesser Kestrel and the Secretary bird.
- The PAOI is located in an area within 5 km of FEPA 12 and in the same catchment.
- The PAOI is classified as a river corridor.
- The PAOI habitat type is classified as Springbokvlakte Thornveld which has a threat status of vulnerable.

CBAs are areas considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and the functionality of ecosystems. The LCPv2_CBA_Layer (2013) highlights the important vegetation types and species that require protection in the study area. The study area falls within a CBA 1 and CBA2 zone, however, as can be seen from Figure 5 2, this category includes the impacted areas where existing infrastructure such as roads and paved pathways are located. Approximately 92% (17531 m^2) of the study area is located within CBA1 and a remaining 8% (1525 m^2) of the site is located within CBA2.

The impact of the activities associated with the project is initially seen as high. The reasons are because the buildings and parking lots will be constructed and ultimately fenced making it a definite footprint on the natural environment. This is enhanced by the fact that the veld type is expected to be Springbokvlakte Thornveld which is considered vulnerable.

Even though the largest portion of the proposed footprint of the activities are within a CBA1 and CBA2 zone, the proposed activities will largely be located within areas with a species dominated by Acacia and other bushveld tree. The PAOI hence does not display typical Springbokvlakte Thornveld dominant species as the PAOI is highly distrurbed and transformed. The site is located within impacted veld that is within the town of Pienaarsrivier and is surrounded by built up environment.

As mentioned in Section 10; Table 10-1 which discusses these species and the unlikihood of occurrence within the PAOI. The PAOI does not display any aquatic functions and does not display any river corridors.

Impact	Status	Extent	Duration	Severity	Frequency	Probability of occurrence	Significance without mitigation		Significance with mitigation
Terrestrial Critical Biodiversity Areas (CBAs)	Negative	1	4	2	5	4	63	Medium	Low

Mitigation:

- Strict management during construction phase to limit the extent of the footprint of the impact.
- No areas outside the final footprint may be cleared.

Management of construction related impacts such as eating areas, concrete mixing areas, storage yard should only be allowed in designated areas.

9.1.2. Impact of Proposed development on maintaining the CBA in a natural or near natural state or after achieving rehabilitation

The proposed development will not maintain the CBA in a natural or near natural state as the site does not display CBA properties. The proposed development will alter the PAOI in terms of the existing vegetation which is described as open veld. The species present within this vegetation area is not of conservation concern, is considered alien and non-endemic. Section 11 Table 10-1 indicates the unlikelihood of these SCC occuring within the PAOI. Considering that area falls within CBA1 and CBA2 but does not display properties of either CBA therefore after rehabilitation the PAOI may not be restored to display CBA1 or CBA2 properties.

Impact	Status	Extent	Duration	Severity	Frequency	Probability of occurrence	Significance without mitigation		Significance with mitigation
Impact of Proposed development on maintaining the CBA in a natural or near natural state or after achieving rehabilitation	Negative	1	5	5	1	1	22	Low	Low

Mitigation:

- Strict management during construction phase to limit the extent of the footprint of the impact.
- No areas outside the final footprint may be cleared.
- Management of construction related impacts such as eating areas, concrete mixing areas, storage yard should only be allowed in designated areas – outside the CBA zones.

9.1.3. Impact on species composition and structure of vegetation

Within the PAOI the vegetation structure is described as open veld. The site is calculated to be 1.9 ha and an area of 14926 m^2 (1.49 ha) requires the clearing of vegetation. Since the site is uniform in structure the extent of clearing will be the same throughout the site. This means that 100% of the open veld will be lost to transformation either due to concreting or landscaping

Impact	Status	Extent	Duration	Severity	Frequency	Probability of occurrence	Significance without mitigation		Significance with mitigation
Species composition and structure of vegetation	Negative	1	4	5	1	3	40	Low	Low

Mitigation:

- Natural open spaces outside the development footprint should be left in their undeveloped state.
- Any existing or new exotic vegetation within the proposed development site must be eradicated.
- A monitoring program should be put in place to remove exotic vegetation and maintain areas free from exotic invasions during the construction and operational phase.
- Indigenous veg to be used for landscaping purposes

9.1.4. Impact on ecosystem threat status

The ecosystem threat status is considered vulnerable according to the NBA, 2018. The footprint area with regard to the entire site is used to determine the loss of habitat. This site does not present any CBA1 or CBA2 properties and neither Springbokvlakte Thornveld vegetation hence leaving room for the re-evaluation of the threat status. The open veld habitat will experience a loss of 14926 m^2 (1.49 ha) (78%). Upon consulting the IUCN, red data list and TOPs list the habitat lost does not provide sufficient habitat for the mentioned species (Please refer to Section 10; Table 10-1).

Impact	Status	Extent	Duration	Severity	Frequency	Probability of occurrence	Significance without mitigation		Significance with mitigation
Ecosystem threat Status	Negative	1	5	5	1	4	55	Medium	Low

Mitigation:

- Strict management during construction phase to limit the extent of the footprint of the impact.
- No areas outside the final footprint may be cleared.

Management of construction related impacts such as eating areas, concrete mixing areas, storage yard should only be allowed in designated areas.

9.1.5. Impact on explicit subtypes in the vegetation

The vegetation within the area is classified as the Springbokvlakte Thornveld (Figure 5-1). The development will impact 14926 m^2 (1.49 ha). of this vegetation. However upon site inspection the composition of vegetation on the site is dominated by alien vegetation and not the expected Springbokvlakte Thornveld vegetation. The current threat status is vulnerable which is addressed in 9.1.4 and represented in Section 11.

Impact	Status	Extent	Duration	Severity	Frequency	Probability of occurrence	Significance without mitigation	Significance with mitigation

Explicit subtypes in the vegetation	Negative	1	5	3	1	3	36	Low	Low

Mitigation:

- Natural open spaces outside the development footprint should be left in their undeveloped state.
- Any existing or new exotic vegetation within the proposed development site must be eradicated.
- A monitoring program should be put in place to remove exotic vegetation and maintain areas free from exotic invasions during the construction and operational phase.
- Indigenous veg to be used for landscaping purposes

9.1.6. Impact on overall ecosystem diversity of the site

The extent of loss within the Springbokvlakte Thornveld is 14926 m^2 (1.49 ha). This site presents no ecological processes as it is surrounded by development like a main road and a housing development. The PAOI is flagged as a river corridor and presents no aquatic features on site.

Impact	Status	Extent	Duration	Severity	Frequency	Probability of occurrence	Significance without mitigation		Significance with mitigation
Ecosystem diversity	Negative	2	5	2	1	2	27	Low	Low

Mitigation:

- Strict management during construction phase to limit the extent of the footprint of the impact.
- No areas outside the final footprint may be cleared.
- Indigenous veg to be used for landscaping purposes

Management of construction related impacts such as eating areas, concrete mixing areas, storage yard should only be allowed in designated areas.

9.1.7. Impact on any changes to the threat status of ecosystems in the CBA

The site does not reflect CBA properties therefore the PAOI has not been incorrectly identified therefore no added loss was indicated as part of the CBA.

Impact	Status	Extent	Duration	Severity	Frequency	Probability of occurrence	Significance without mitigation		Significance with mitigation
Changes to the threat status of ecosystems in the CBA	Negative	2	5	3	1	3	40	Low	Low

Mitigation:

- Strict management during construction phase to limit the extent of the footprint of the impact.
- No areas outside the final footprint may be cleared.

Management of construction related impacts such as eating areas, concrete mixing areas, storage yard should only be allowed in designated areas.

9.1.8. Direct, Indirect and cumulative impacts

These impacts are described as impacts that generally impact the site. These impacts include, the natural environment interms of the flora, fauna, hydrology , pollution of groundwater, alien vegetation and erosion.

Impact	Status	Extent	Duration	Severity	Frequency	Probability of occurrence	Significance without mitigation		Significance with mitigation
Infestation of alien invasive species	Negative	1	3	5	1	5	54	Medium	Low
Hydrological Impacts	Negative	2	5	5	2	1	36	Low	Low
Pollution of surface and groundwater due to chemical, oil and fuel spills	Negative	2	2	5	1	5	54	Medium	Low
Erosion	Negative	1	5	3	3	3	54	Medium	Low
Cumulative Impact	Negative	2	5	3	4	3	70	Medium	Low

Infestation of alien invasive species

Mitigation:

- Natural open spaces outside the development footprint should be left in their undeveloped state.
- Any existing or new exotic vegetation within the proposed development site must be eradicated.
- A monitoring program should be put in place to remove exotic vegetation and maintain areas free from exotic invasions during the construction and operational phase.
- Indigenous veg to be used for landscaping purposes

Hydrological Impacts

Mitigation:

- Silt traps must be installed on the development site boundary during construction;
- Small-scale diversion berms should be constructed, to reduce the risk of the earthworks becoming a preferred surface flow path leading to erosion;
- "Trench-breakers", which are in-trench barriers, should be installed within any trench excavations to intercept and minimise the accumulation of surface runoff water from upslope areas running down the trenches;
- Erosion control structures must be put in place where soil may be prone to erosion;
- Engineering structures (such as gabions or reno mattresses) for large discharge points must be used to dissipate and control energy of stormwater runoff;
- Regular evaluation of the effectiveness of the engineering structures and discharge points should occur during construction and operational phase.
- Bare areas where vegetation has been removed pose a risk of becoming a sediment load during heavy rainfall, this must be managed by placing it on the upslope side of the development site;
- Temporary stormwater management structures must be used during construction. Any areas damaged as a result of stormwater runoff from the construction site must be rehabilitated immediately; and

During rehabilitation, prompt and progressive reinstatement of bare areas is required. During reinstatement, the topsoil layer is to be replaced last, to simulate the pre-construction soil conditions.

Pollution of surface and groundwater due to chemical, oil and fuel spills

Mitigation:

- Extra care must be taken to prevent any potentially hazardous substances from entering the groundwater during heavy rainfall events by implementing mitigation plans, such as the Stormwater Management Plan;
- The use and handling of all chemicals and potentially hazardous substances must take place on an impermeable surface and bunded areas to prevent chemicals and potentially hazardous substances from infiltrating the soil;

- All rubble and other types of waste must be appropriately stored and disposed of at a licensed waste disposal site;
- Contingency plans must be compiled for possible spillages of dangerous goods and include details for decontamination and process to be followed;
- Spill kits must be available in the event of a hydrocarbon or chemical spill.

Erosion
Mitigation:

- Bare soils should be kept to a minimum
- Maintain a healthy, perennial plant cover.
- Mulching.
- Planting a cover crop
- Place crushed stone, wood chips, and other similar materials in heavily used areas where vegetation is hard to establish and maintain.

10. RESULTS OF FAUNA AND FLORA ASSESSMENT

10.1. Site Sensitivity Verification – Vegetation Assessment

Due to the surrounding areas of the high levels of disturbance in the area, the likelihood of the study area presenting a CBA 1, priority focus area and a vulnerable ecosystem is low. The likelihood of encountering small animals was incredibly low within the study area.

The study area presented a savanna type biome characteristic that is covered with Acacia and other bushveld tree species. The transformation of the area is a direct result of the development of the Pienaarsrivier which is presented as an agricultural hub and the city of Pretoria presented as the development of business infrastructure and residential townships in Pienaarsrvier. The study area presented *Ischaemum afrum* Dandy (Turf grass) along with the encroachment of *Tagetes minuta**[5] in the bushveld areas. The area appears to have revegetated naturally and is dominated by alien weedy species. The annual alien herbs was the most visibly prominent taxa at the time of the field visit and has colonised large portions of the area. Other commonly recorded herbaceous species include *Acalypha indica, Bidens bipinnata*, Bidens pilosa*, Gomphocarpus fruticosa, Schkuhria bipinnata**. Recorded grasses include, *Aristida bipartite, Eragrostis lehmaniana and Dichanthium annulatum*. Scattered woody species were noted and included *Vachellia tortilis* within the open veld.

During the site visit, no common bird species, small mammals, amphibians or reptiles were observed whilst walking the 19 056.7 m^2 (1.9 ha) study area. The area did not provide sufficient habitat for species particularly of conservation concern because of the transformation and fragmentation of the site.

10.2. Species of Provincial concern

As per the Limpopo C-Plan V2, portions of the study area are located in areas defined as CBAs as a result of the red listed fauna and faunal species (among others) which could potentially occur. The Botanical Database of Southern Africa (BODATSA) site provided plant species for the area covered by the grey shaded square (Figure 10-1). The application area is indicated in red. No species of conservation concern were recorded for the BODATSA search area. the species identified included the *Fabaceae Vachellia* (Karoo) and the *Loranthaceae Agelanthus natalitius subsp. Zeyheri* both of which are classified as LC.

A search of the online Virtual Museum of African Mammals provided 21 records for mammal species, 45 records for aves species, 31 records for lepidoptera, 15 records for Dung beetle species, 14 records for frog species, 13 records for lacewing species, 33 records for odonata species, 33 records for reptile species and 1 record for a spider species spotted in the 2528AB quaternary degree square (Appendix 1). Of the records 1 mammal, 1

[5] denotes alien species

amphibian and 1 reptile was classified as vulnerable no other species identified were of conservation concern (Table 10-1).

For the Mammals the occurrences of the SCC listed in Table 10-1 were checked for their potential occurrence utilizing the following databases along with a site visit to confirm if the SCC are present in the study area.

- iNatualist
- Virtual Museum of African Mammals (MammalMAP, 2020)
- The African Chiroptera Report (for bats)

For the Avifauna the occurrences of the SCC listed in Table 10-1 were checked for their potential occurrence utilizing the following databases along with a site visit to confirm if the SCC are present in the study area.

- iNatualist
- Southern African Bird Atlas Project 2 (SABAP2, 2020)
- Co-ordinated Wetland Counts
- Co-ordinated Avifaunal RoadCounts
- Birds in Nature Reserve Projects

For the Herpetofauna the occurrences of the SCC listed in Table 10-1 were checked for their potential occurrence utilizing the following databases along with a site visit to confirm if the SCC are present in the study area.

- iNatualist
- Reptile Atlas of Southern Africa (Reptile Map, 2020)
- Frog Atlas of Southern Africa (FrogMap, 2020)

For the Terrestrial Inverterbrates the occurrences of the SCC listed in Table 10-1 were checked for their potential occurrence utilizing the following databases along with a site visit to confirm if the SCC are present in the study area.

- iNatualist
- Atlas of Lepidoptera (LepiMAP, 2020)
- Atlas of Dung Beetles in southern Africa (Dung BeetleMAP, 2020)
- Atlas of southern African Spiders (SpiderMAP, 2020)

For the plant theme the occurrences of the SCC listed in Table 10-1 were checked for their potential occurrence utilizing the following databases along with a site visit to confirm if the SCC are present in the study area.

- iNatualist
- Botanical Database of Southern Africa (NEWPOSA)
- Global Biodiversity Information Facility (GBIF)
- Atlas of African Orchids (OrchidMap)

During the site visit, it was determined that the mammal, avifauna, Amphibians and reptiles (Herpetofauna), Terrestrial Invertebrates and plant SCC had a low to no potential for occurrence within the proposed development area. This area holds no suitable habitat for the listed species due to the transformation, fragmentation and situation of the study site.

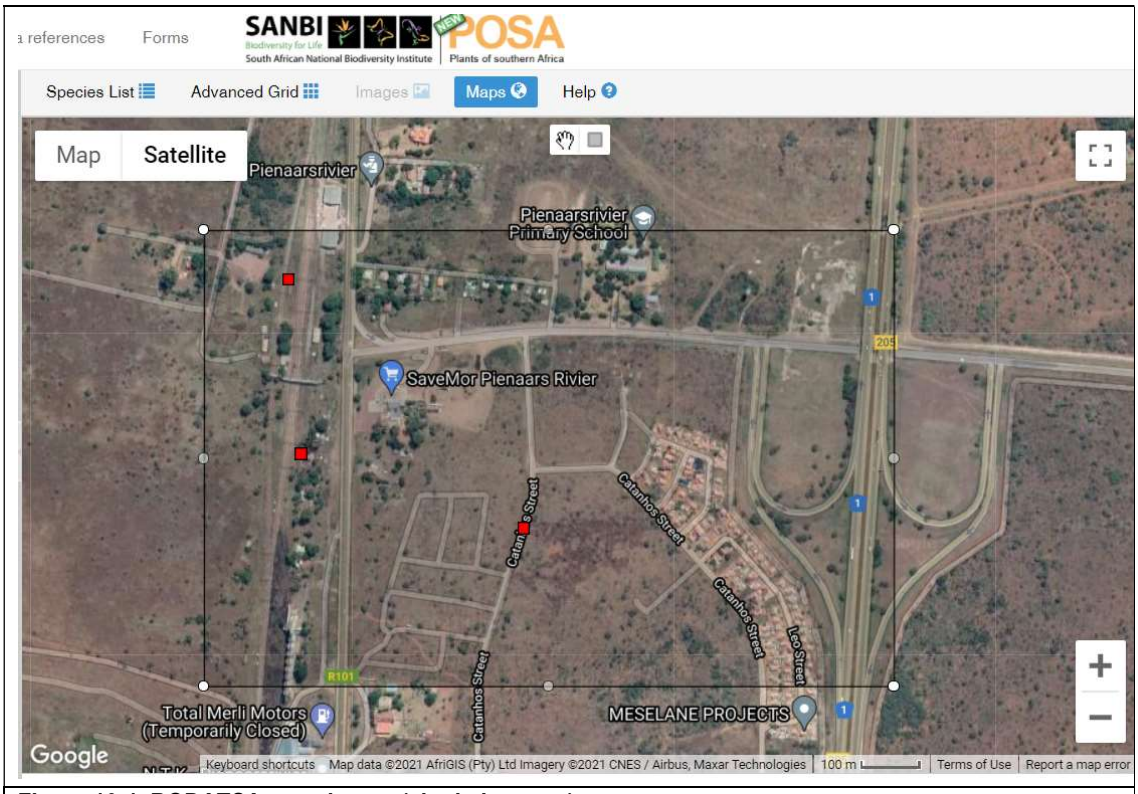

Figure 10-1. BODATSA search area (shaded square).

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10.3. Species of Special Concern and Red data Species

Table 10-1. Species of special concern.

Family	Scientific Name	Common Name	TOPS Status	IUCN Status	Km²	Likelihood of occurrence	Motivation
Mammals							
Felidae	Leptailurus serval	Serval	Protected	LC		**Low**	Due to the nature of the animal and the location of the project, it is unlikely that this species would be found in proximity to the study area roaming freely. The amount of anthropogenic activity in the area also makes it an undesirable area for the species to inhabit. Serval cats (*Leptailurus serval*) reproduce throughout the year with peaks in the wet season (spring to summer). The survey was conducted in summer to support the unlikeliness of occurrence.
Felidae	Panthera pardus	Leopard		VU		**Low**	Due to the size of the animal and the location of the project, it is unlikely that this species would be found in proximity to the study area roaming freely. The amount of anthropogenic activity in the area also makes it an undesirable area for the species to inhabit. *Panthera pardus* are present all year round. During May to September these animals seek warmer areas, during the winter months. In summer, leopards hide in the shady boughs of trees. The survey was conducted in summer to support the unlikeliness of occurrence.

Family	Scientific Name	Common Name	TOPS Status	IUCN Status	Km²	Likelihood of occurrence	Motivation
Aves							
Accipitridae	**Circus ranivorus*	African marsh harrier		EN	**(0.021796 km²/12615.35k m²)x100= 0%**	**Low**	Habitat type: Commonly located in Reed beds, floodplains, lake margins. No reed beds, floodplains, lake margins areas were identified within close proximity to the proposed development. The study site does not present a suitable habitat. These birds are sighted in the area during mid to end summer (December-April). The survey was conducted in summer to support the unlikeliness of occurrence.
Tytonidae	**Tyto capensis*	African Grass Owl		LC	**(0.021796 km²/3153.92 km²)*100= 0%**	**Low**	Habitat type: Savanna, shrubland, grassland and the habitat types required were observed on site. The site is disturbed and does not have natural grasslands which provides potential habitat for this species. The peak breeding activity of these birds are evident during summer (February to April). The survey was conducted in summer so observations of this species will not be to support the unlikeliness of occurrence.
Anatidae	*Nettapus auritus*	African Pygmy-Goose		LC		**Low**	Habitat type: Terrestrial environment, where it occurs in freshwater wetlands, such as marshes, lakes, rivers and creeks. No freshwater wetlands, such as marshes, lakes, rivers and creeks areas were identified within close proximity to the proposed development. The study site does not present a suitable habitat. This bird is an uncommon winter visitor. It may be observed during late Oct to late May, usually in summer.

Family	Scientific Name	Common Name	TOPS Status	IUCN Status	Km²	Likelihood of occurrence	Motivation
							The survey was conducted in summer so observations of this species will not be to support the unlikeliness of occurrence.
Reptiles							
	*Sensitive species 2		VU	LC		**Low**	Due to the nature of the animal and the location of the project, it is unlikely that this species would be found in proximity to the study area roaming freely. The amount of anthropogenic activity in the area also makes it an undesirable area for the species to inhabit. Habitat type: This species relies on open water for survival. Large aquatic habitats (ponds, rivers, dams etc.) No open water bodies are located within proximity to the study area, therefore the potential occurrence of this species on this site is low.
Amphibians							
Pyxicephalidae	*Pyxicephalus adspersus*	Giant Bull Frog		LC		**Low**	Habitat type: The species has an affinity toward water. No wetland or waterlogged areas were identified within close proximity to the proposed development., therefore the potential occurrence of this species on this site is low.
Invertebrates							

Family	Scientific Name	Common Name	TOPS Status	IUCN Status	Km²	Likelihood of occurrence	Motivation
Coenagrionidae	*Pseudagrion coeleste*	Catshead Sprite		LC		**Low**	Habitat type: This species favours freshwater marshes and pools with emergent vegetation. No freshwater marshes and pools with emergent vegetation areas were identified within close proximity to the proposed development, therefore the potential occurrence of this species on this site is low. These invertebrates are primarily **summer** creatures The survey was conducted in summer so observations of this species will not be to support the unlikeliness of occurrence.
Plants							
Fabaceae	**Cullen holubii*	scrambling fig, Burtt Davy's fig, veld fig			**(0.021796 km²/ 1.27 km²*100)= 1.7%**	**Low**	Habitat type: Bushveld, sandy savanna areas. The site does not have bushveld habitat or sandy soils, which provides potential habitat for this species. The site is disturbed and does not have forest habitat which provides potential habitat for this species. This plant is observed throughout the year but was not observed during the site visit.
	*Sensitive species 1252		VU	VU	**(0.021796 km²/ 73.01 km²*100)= 0.03%**	**Low**	The growing season (autumn and winter), although the survey was done during summer the remains of this plant would have been observed. Habitat type: It is common and widespread in forest and thicket, throughout the summer rainfall areas of East and Southern Africa. Also located in margins of forest and in bracken or ericoid scrub. The site is disturbed and does not

Family	Scientific Name	Common Name	TOPS Status	IUCN Status	Km²	Likelihood of occurrence	Motivation
							have forest habitat which provides potential habitat for this species.
Fabaceae	*Vachellia xanthophloea*	Fever tree		LC		**Low**	Flowering occurs from August or September to November. This tree is very distinguishable and was not observed during the site visit. Habitat type: tropical rainforests and dry forests. The site is disturbed and does not have forest habitat which provides potential habitat for this species.
Loranthaceae	*Agelanthus natalitius subsp. Zeyheri*	Natal Mistletoe				**Low**	Flowering occurs in the winter season but not usually located in these areas and was not observed during the site visit. Habitat type: mixed woodland and bushland. The site is disturbed and does not have woodland and/or bushveld habitat which provides potential habitat for this species.

* These species were identified as species of concern by the DEA Screening tool

11. PROPOSED IMPACT MANAGEMENT ACTIONS

The following key issues have been identified and assessed during this Fauna and Flora Assessment:

- Impact on Critical Biodiversity Areas with specific reference to species composition, diversity and structure, ecosystem status and species of special concern;
- Impact on Ecological Support Areas in terms of ecological processes, functionality and loss of corridors;
- Impact on Protected Areas extent and potential loss of expansion areas;
- Impact on habitat, water quantity and quality of Strategic Water Source Areas; and
- Impact on the extent and integrity of Springbokvlakte Thornveld with reference to potential loss.

It should be noted that the proposed layout of infrastructure has been amended after discussions with key stakeholders and interested parties, as well as specialists to minimise the impacts. This impact assessment is therefore based on the preferred alternative layout option which minimises the impacts on the ecological features of the study area.

11.1. Site Area

Due to the footprint of the proposed infrastructure, the habitat disturbance is likely to occur, however disturbed and exposed soil and exposed could lead to erosion and alien species encroachment. Standard management measures will be applicable during construction in terms of minimising the footprint, management of hazardous substances and clearance of limited footprint.

11.1.1. Impact on Critical Biodiversity Areas

The PAOI was identified as CBA1 and CBA2 because of the following reasons:

- The potential that species of conservational concerns may be located within the area. These species include the African Finfoot, African Grass-Owl, African Marsh-Harrier, Lesser Kestrel and the Secretary bird.
- The PAOI is located in an area within 5 km of FEPA 12 and in the same catchment.
- The PAOI is classified as a river corridor.
- The PAOI habitat type is classified as Springbokvlakte Thornveld which has a threat status of vulnerable.

CBAs are areas considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and the functionality of ecosystems. The LCPv2_CBA_Layer (2013) highlights the important vegetation types and species that require protection in the study area. The study area falls within a CBA 1 and CBA2 zone, however, as can be seen from Figure 5 2, this category includes the impacted areas where existing infrastructure such as roads and paved pathways are located. Approximately 92% (17531 m^2) of the study area is located within CBA1 and a remaining 8% (1525 m^2) of the site is located within CBA2.

The impact of the activities associated with the project is initially seen as high. The reasons are because the buildings and parking lots will be constructed and ultimately fenced making it a definite footprint on the natural environment. This is enhanced by the fact that the veld type is expected to be Springbokvlakte Thornveld which is considered vulnerable.

Even though the largest portion of the proposed footprint of the activities are within a CBA1 zone and a smaller part within a CBA2 zone, the proposed activities will largely be located within areas with a species dominated by Acacia and other bushveld tree. The PAOI hence does not display typical Springbokvlakte Thornveld dominant species as the PAOI is highly distrurbed and transformed. The site is located within impacted veld that is within the town of Pienaarsrivier and is surrounded by built up environment.

As mentioned in Section 10; Table 11-1 which discusses these species and the unlikihood of occurrence within the PAOI. The PAOI does not display any aquatic functions and does not display any river corridors.

Impact	Status	Extent	Duration	Severity	Frequency	Probability of occurrence	Significance without mitigation		Significance with mitigation
Terrestrial Critical Biodiversity Areas (CBAs)	Negative	1	4	2	5	4	63	Medium	Low
Mitigation: • Strict management during construction phase to limit the extent of the footprint of the impact. • No areas outside the final footprint may be cleared. Management of construction related impacts such as eating areas, concrete mixing areas, storage yard should only be allowed in designated areas.									

11.1.2. Impact on Ecological Support Areas

Ecological Support Areas protect the critical conservation areas from edge effects, as well as provide ecological support at the same time through forage areas and movement corridors. Based on the LCPv2_CBA_Layer (2013) no ESAs occur within the terrestrial study area. This impact will therefore not be assessed.

11.1.3. Impact on Protected Areas and Expansion Areas

Protected Area Expansion allow for improved ecosystem representation, ecological sustainability and resilience to climate change (DEA, 2016). Based on the NPAES database (SANBI, 2010) no protected and expansion areas occur within the terrestrial study area. This impact will therefore not be assessed.

11.1.4. Strategic Water Source Areas

Based on the SWSA_all_v3_Nov2017 database (SANBI, 2017) no Strategic Water Source Areas occur within the terrestrial study area. This impact will therefore not be assessed.

11.1.5. Impact on the extent and integrity of Springbokvlakte Thornveld

The vegetation within the area is classified as the Springbokvlakte Thornveld (Figure 5-1). The development will impact 14926 m^2 (1.48 ha). of this vegetation. However upon site inspection the composition of vegetation on the site is dominated by alien vegetation and not the expected Springbokvlakte Thornveld vegetation. The current threat status is vulnerable which is addressed in 9.1.4 and represented in Section 11.

Impact	Status	Extent	Duration	Severity	Frequency	Probability of occurrence	Significance without mitigation		Significance with mitigation
Explicit subtypes in the vegetation	Negative	1	5	3	1	3	36	Low	Low
Mitigation: • Natural open spaces outside the development footprint should be left in their undeveloped state. • Any existing or new exotic vegetation within the proposed development site must be eradicated. • A monitoring program should be put in place to remove exotic vegetation and maintain areas free from exotic invasions during the construction and operational phase. • Indigenous veg to be used for landscaping purposes									

11.1.6. Impacts on the Species of Conservation Concern

The nature and extent of the potential impact of the proposed development on the population of the SCC located within the study area is low as the habitat of these species are not located within the study area.

There is no conservation concern of these species within the study area as these species are not located within this area. Neither their habitats nor their surrounding landscape and ecological processes will be impacted during this proposed construction.

Table 11-1 Impacts on the Species of Conservation Concern.

Family	Scientific Name	Common Name	Geographical scale or spatial scope	Duration temporal scope	Frequency or re-occurrence	Magnitude or severity	Justification for magnitude/severity
Mammals							
Felidae	Leptailurus serval	Serval	Local or project footprint	Long term (>20 year)	**Highly irregular**	Very Low	Low intensity disturbance as species does not occur within the study area.
Felidae	Panthera pardus	Leopard	Local or project footprint	Long term (>20 year)	**Highly irregular**	Very Low	Low intensity disturbance as species does not occur within the study area.
Aves							
Accipitridae	**Circus ranivorus*	African marsh harrier	Local or project footprint	Long term (>20 year)	**Highly irregular**	Very Low	Low intensity disturbance of surrounding habitat and breeding from possible noise of vehicles
Tytonidae	**Tyto capensis*	African Grass Owl	Local or project footprint	Long term (>20 year)	**Highly irregular**	Very Low	Low intensity disturbance of surrounding habitat and breeding from possible noise of vehicles
Anatidae	*Nettapus auritus*	African Pygmy-Goose	Local or project footprint	Long term (>20 year)	**Highly irregular**	Very Low	Low intensity disturbance of surrounding habitat and breeding from possible noise of vehicles
Reptiles							
	*Sensitive species 2		Local or project footprint	Long term (>20 year)	**Highly irregular**	Very Low	Low intensity disturbance as species does not occur within the study area.
Amphibians							
Pyxicephalidae	*Pyxicephalus adspersus*	Giant Bull Frog	Local or project footprint	Long term (>20 year)	**Highly irregular**	Very Low	Low intensity disturbance as species does not occur within the study area.
Invertebrates							
Coenagrionidae	*Pseudagrion coeleste*	Catshead Sprite	Local or project footprint	Long term (>20 year)	**Highly irregular**	Very Low	Low intensity disturbance of habitat and breeding from possible noise of vehicles
Plants							
Fabaceae	**Cullen holubii*	scrambling fig, Burtt Davy's fig, veld fig	Local or project footprint	Long term (>20 year)	**Highly irregular**	Very Low	Low intensity disturbance of surrounding habitat.
	*Sensitive species 1252		Local or project footprint	Long term (>20 year)	**Highly irregular**	Very Low	Low intensity disturbance of surrounding habitat.
Fabaceae	*Vachellia xanthophloea*	Fever tree	Local or project footprint	Long term (>20 year)	**Highly irregular**	Very Low	Low intensity disturbance of surrounding habitat.

Family	Scientific Name	Common Name	Geographical scale or spatial scope	Duration temporal scope	Frequency or re-occurrence	Magnitude or severity	Justification for magnitude/severity
Loranthaceae	*Agelanthus natalitius subsp. Zeyheri*	Natal Mistletoe	Local or project footprint	Long term (>20 year)	**Highly irregular**	Very Low	Low intensity disturbance of surrounding habitat.

12. RESULTS OF THE ENVIRONMENTAL SCREENING TOOL

12.1. Animal species theme sensitivity

The screening tool identified *Circus ranivorus* (African marsh harrier), *Tyto capensis* (African Grass Owl) and Sensitive species 2 as an Animal feature. On the IUCN red data list this species is classifies as LC and in the TOPS list *Circus ranivorus* (African marsh harrier), *Tyto capensis* (African Grass Owl) is classified as least concern and Sensitive species 2 as vulnerable. However this site does not possess a suitable habitat for this species to occur. No further threatened animal species is present on site and none are expected due to lack of suitable habitat. The proposed development will therefore not affect any threatened animal species or its habitat.

12.2. Plant species theme sensitivity

The screening tool identified *Cullen holubii* (scrambling fig, Burtt Davy's fig, veld fig) and Sensitive species 1252 as a Plant feature. On the IUCN red data list, the SANBI Red List of South African Plants and in the TOPS list the Cullen holubii is classified as least concern and the Sensitive species 1252 as vulnerable. However this site does not possess a suitable habitat for this species to occur. No further threatened plant species is present on site and none are expected due to lack of suitable habitat. The proposed development will therefore not affect any threatened plant species or its habitat.

13. CONCLUSION

According to GN.No. 960 which was published in GG No. 42561 of 05 July 2019, it is a requirement to submit a report generated by the national web-based environmental screening tool in terms of section 24(5)(h) of the NEMA, 1998 (Act No 107 of 1998) and regulation 16(1)(b)(v) of the EIA regulations, 2014, as amended. According to the results from the environmental screening assessment, the site falls within a very high biodiversity, high agriculture, high animal and medium plant species theme.

Based on historical aerial imagery, it appears the site was either cleared or burned between 2005 and 2009 and again in 2017, which destroyed the vegetation on the site. As discussed in the vegetation compliance statement, the dominant vegetation in the disturbed grassland vegetation unit is weedy and pioneer species indicating that the vegetation is in an early successional state, with a few individuals from remnant later successional species. The remnant later successional species are present in very low densities and are not characteristic of the vegetation unit. This vegetation does not provide suitable habitat for SCC, and limited habitat for any species, except a few common species birds and invertebrates.

The current use of the land and environmental sensitivity as identified by the national web based environmental screening tool is herewith disputed. The site has been transformed and contains only limited species representative of the natural vegetation of the area. The specialist is of the opinion that this specialist study was conducted independently and based on our expertise, sufficient evidence is provided in support of the **low** environmental sensitivity of the proposed development site.

14. REFERENCES

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Annexure A: Curriculum Vitae of Specialists