



SCIENTIFIC TERRESTRIAL SERVICES

Terrestrial Biodiversity Verification Report

FOR THE PROSPECTING RIGHTS APPLICATION
AT MAREESBURG NEAR DER BROCHEN,
LIMPOPO PROVINCE.

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Part of the SAS Environmental Group of Companies

EXECUTIVE SUMMARY

Scientific Terrestrial Services (Pty) Ltd (STS) was appointed by Environmental Management Assistance (Pty) Ltd (EMA), the Environmental Assessment Practitioner (EAP), to verify the presence of terrestrial biodiversity features (i.e., fauna and flora) within the Farm Mareesburg 8 JT, where Nomamix (Pty) Ltd (the applicant) is applying for the right to prospect Platinum Group Metals (PGM); hereafter referred to as the “application area” (2133.29 hectares (ha)).

STS was required to report on aspects of terrestrial biodiversity (fauna and flora) triggered by the National Web-based Environmental Screening Tool (“Screening Tool” hereafter). In addition, it was required to provide input into any development constraints or enviro-legal constraints that may arise for the proposed prospecting rights application within the application area in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended (NEMA), the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA), and the Limpopo Environmental Management Act, 2003 (Act No.7 of 2003) (LEMA) – refer also to section 1.4 of this report. STS was required to, if necessary, assess the risk (if any) that the proposed prospecting rights application may pose to the receiving environment.

The applicant is applying for the right to prospect Platinum Group Metals on the Farm Mareesburg 8 JT, in the magisterial district of Fetagoma Tubatse, Limpopo. The proposed non-invasive prospecting activities will include the following main techniques:

- Data search, field mapping and desktop studies;
- Logging and sampling historical core; and
- Scoping and (pre) feasibility studies.

Habitat Summary

The below broad habitat units could be distinguished within the application area:

- **Degraded Habitat:**
 - Secondary Bushveld (historically cultivated and areas experiencing significant edge effects) and Transformed Habitat (mining-related).
- **Freshwater Habitat¹.** The below grouping is based on similarities in vegetation structure and species composition. For a breakdown of the Freshwater Habitat into Hydrogeomorphic (HGM) units, please refer to the Freshwater Ecological Verification:
 - An Artificial Feature, Ephemeral and Episodic Drainage Lines (EEDLs), Rivers and Streams (including two Perennial Streams and the Groot-Dwars River), and Wetlands (comprising a Channelled Valley Bottom and several smaller Seep Wetlands).
- **Montane Grassland:**
 - Sekhukhune Montane Grassland and Steenkampsberg Montane Grassland.
- **Sekhukhune Mountain Bushveld:**
 - Open Bushveld, Mountain Bushveld, and Wooded Cliffs.

Compliance Statement/Impact Statement

Based on the high-level *ground-truthed* results, including available desktop data and previous studies done in the area, the below figure depicts the sensitivity of each identified habitat units for both the flora and fauna. The areas are awarded a sensitivity in terms of the presence or potential for SCC, habitat integrity and levels of disturbance, threat status of the habitat type, and the presence of unique landscapes. For the floral assessment, the data gathered during the site visit indicate that the Degraded Habitat is of **Low** and **Moderately Low** Sensitivity, the Open Bushveld of **Moderately-High Sensitivity**,

¹ The Freshwater Habitat encompasses true watercourses. In terms of the definition contained within the National Water Act, 1998 (Act No. 36 of 1998), a watercourse means:

- A river or spring;
 - A natural channel which water flows regularly or intermittently;
 - A wetland, dam or lake into which, or from which, water flows; and
 - Any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse;
- and a reference to a watercourse includes, where relevant, its bed and banks.



and the Freshwater Habitat, Mountain Bushveld, Wooded Cliffs, and Montane Grassland habitat of **High Sensitivity**. For the faunal assessment, the data gathered during the site visit indicate that the Degraded Habitat is of **Low** and **Moderately Low** Sensitivity, the Open Bushveld and Montane Grassland habitat of **Moderately-High** Sensitivity, and the Freshwater Habitat, Wooded Cliffs, and Mountain Bushveld of **High Sensitivity**.

In terms of the Screening Tool outcomes, the combined **terrestrial biodiversity theme** was confirmed high for most of the habitat units, excluding only the Degraded Habitat Unit. The medium sensitivity for the **plant species theme** was confirmed for all but the Degraded Habitat Unit; however, for some of the habitat units a high is recommended due to the confirmed presence of SCC. The **animal species theme outcome** was high for three SCC which were also established by the field assessment. Medium sensitivity was assigned to another 16 SCC which were mostly established as high sensitivity except for three species which have a low POC within the application area. Below is a summary table of the Screening Tool outcome and the field-verified results for each of the terrestrial biodiversity themes.

Table A: Screening Tool verification – summary table.

Screening Tool Sensitivity	Verified Sensitivity	Outcome Statement/Plan of Study	Relevant Section Motivating Verification
ANIMAL SPECIES THEME			
MAMMALS			
High	High	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
Medium	Medium (high recommended)	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
AVIFAUNA			
High	High	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
Medium	Medium (high recommended)	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
REPTILES			
Medium	Medium (high recommended)	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
AMPHIBIANS			
Not indicated	High recommended	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
INVERTEBRATES			
Not indicated	High recommended	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
PLANT SPECIES THEME			
DEGRADED HABITAT			
Medium	Low	Compliance Statement	Section 4.1
FRESHWATER HABITAT			
Medium	Medium (high recommended for EEDLs)	Terrestrial Plant Species Specialist Assessment Report	Section 4.1
MONTANE GRASSLAND HABITAT			
Medium	Medium (high recommended)	Terrestrial Plant Species Specialist Assessment Report	Section 4.1
SEKHUKHUNE MOUNTAIN BUSHVELD HABITAT			
Medium	Medium	Terrestrial	Section 4.1



Screening Tool Sensitivity	Verified Sensitivity	Outcome Statement/Plan of Study	Relevant Section Motivating Verification
	(high recommended)	Plant Species Specialist Assessment Report	
TERRESTRIAL BIODIVERSITY THEME			
DEGRADED HABITAT			
High	Low	Compliance Statement	Section 4.1
FRESHWATER HABITAT			
High	High	Terrestrial Biodiversity Specialist Assessment	Section 4.1
MONTANE GRASSLAND HABITAT			
High	High	Terrestrial Biodiversity Specialist Assessment	Section 4.1
SEKHUKHUNE MOUNTAIN BUSHVELD HABITAT			
High	High	Terrestrial Biodiversity Specialist Assessment	Section 4.1

Reasoned Opinion

The proposed non-invasive prospecting, consisting of a detailed desktop assessment and research of historical prospecting data, is not anticipated to have any significant or residual impacts² on the receiving environment (i.e., fauna, flora, and terrestrial habitat will not be impacted). However, if the detailed desktop assessment concludes that there is a need for additional borehole drilling (and associated prospecting road construction) as part of prospecting activities, impacts to the receiving environment will take place. In such an event, it is recommended that specialist terrestrial biodiversity assessments be undertaken during the summer months (late February highly recommended, especially for the Montane Grassland floral communities) for areas where prospecting (and associated prospecting roads) will be within habitat identified as sensitive (i.e., where the medium and high screening tool outcomes have been verified). If prospecting will take place in areas where a low sensitivity for the screening tool was recommended, a compliance statement will suffice.

For potential invasive prospecting and/or potential future surface mining, where impacts to biodiversity will be significant and result in residual impacts, biodiversity offsetting may be required. The draft biodiversity offset guideline states that: “A biodiversity offset is required when a proposed listed or specified activity, or activities, is/are likely to have residual negative impacts on biodiversity of moderate or high significance.” In this regard, residual impacts associated with the loss of Freshwater Habitat, Montane Grassland, Mountain Bushveld, Open Bushveld, and all threatened species within these habitat units, will require offsetting.

It should be noted that this terrestrial assessment (including floral and faunal aspects) was undertaken at a high-level to ascertain potential risks and constraints. Due to the low quantum of risk presented by the proposed non-invasive prospecting, a detailed terrestrial assessment was not deemed necessary at this stage. As such, the data presented in this report should not be used for any other purpose than it is intended for.

² A **residual biodiversity impact** is the impact of an activity, or activities, on biodiversity that remains after all efforts have been made to avoid and minimise the impacts of the activity, or activities, and to rehabilitate or restore the affected area to the fullest extent possible.



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DOCUMENT GUIDE

The table below provides a guide to the reporting of biodiversity impacts as they relate to 1) Government Notice No. 320 Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on **Terrestrial Biodiversity** as published in Government Gazette 43110 dated 20 March 2020, and 2) Government Notice No. 1150 Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on **Terrestrial Plant and Animal Species** as published in Government Gazette 43855 dated 30 October 2020.

Theme-Specific Requirements as per Government Notice No. 320 Terrestrial Biodiversity Theme – Very High Sensitivity Rating as per Screening Tool Output		
No.	SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS	Section in report/Notes
2	Terrestrial Biodiversity Specialist Assessment	
2.1	The assessment must be prepared by a specialist registered with the South African Council for Natural Scientific Professionals (SACNASP) with expertise in the field of terrestrial biodiversity.	Cover Page & Appendix C
2.2	The assessment must be undertaken on the preferred site and within the proposed activities footprint.	Section 1
2.3	The assessment must provide a baseline description of the site which includes, as a minimum, the following aspects:	
2.3.1	A description of the ecological drivers or processes of the system and how the proposed mining activities will impact these;	Section 4
2.3.2	Ecological functioning and ecological processes (e.g., fire, migration, pollination, etc.) that operate within the preferred site;	Section 4
2.3.3	The ecological corridors that the proposed mining activities would impede including migration and movement of flora and fauna;	Section 3 & 4
2.3.4	The description of any significant terrestrial landscape features (including rare or important flora-faunal associations, presence of Strategic Water Source Areas (SWSAs) or Freshwater Ecosystem Priority Area (FEPA) sub catchments;	Section 3 & 4 <i>*For descriptions on the presence of FEPAs, please refer to the work done by Scientific Aquatic Services</i>
2.3.5	A description of terrestrial biodiversity and ecosystems on the preferred site, including: <ul style="list-style-type: none"> a) main vegetation types; b) threatened ecosystems, including listed ecosystems as well as locally important habitat types identified; c) ecological connectivity, habitat fragmentation, ecological processes and fine scale habitats; and d) species, distribution, important habitats (e.g., feeding grounds, nesting sites, etc.) and movement patterns identified; 	Section 3 & 4
2.3.6	The assessment must identify any alternative development footprints within the preferred site which would be of a “low” sensitivity as identified by the Screening Tool and verified through the site sensitivity verification; and	Not Applicable to this report. No alternatives provided/identified.
2.3.7	The assessment must be based on the results of a site inspection undertaken on the preferred site and must identify:	
2.3.7.1	Terrestrial Critical Biodiversity Areas (CBAs), including: <ul style="list-style-type: none"> a) the reasons why an area has been identified as a CBA; b) an indication of whether or not the proposed mining activities is consistent with maintaining the CBA in a natural or near natural state or in achieving the goal of rehabilitation; c) the impact on species composition and structure of vegetation with an indication of the extent of clearing activities in proportion to the remaining extent of the ecosystem type(s); d) the impact on ecosystem threat status; e) the impact on explicit subtypes in the vegetation; f) the impact on overall species and ecosystem diversity of the site; and 	Section 3 & 4



	g) <i>the impact on any changes to threat status of populations of species of conservation concern in the CBA;</i>	
2.3.7.2	Terrestrial Ecological Support Areas (ESAs), including: a) <i>the impact on the ecological processes that operate within or across the site;</i> b) <i>the extent the proposed mining activities will impact on the functionality of the ESA; and</i> c) <i>loss of ecological connectivity (on site, and in relation to the broader landscape) due to the degradation and severing of ecological corridors or introducing barriers that impede migration and movement of flora and fauna;</i>	
2.3.7.3	Protected areas as defined by the National Environmental Management Protected Areas Act, 2004 including- a) <i>an opinion on whether the proposed mining activities aligns with the objectives or purpose of the protected area and the zoning as per the protected area management plan;</i>	Section 3 & 4
2.3.7.4	Priority areas for protected area expansion, including- a) <i>the way in which in which the proposed mining activities will compromise or contribute to the expansion of the protected area network;</i>	Section 3 & 4
2.3.7.5	SWSAs including: a) <i>the impact(s) on the terrestrial habitat of a SWSA; and</i> b) <i>the impacts of the proposed mining activities on the SWSA water quality and quantity (e.g., describing potential increased runoff leading to increased sediment load in water courses);</i>	Not Applicable. Please refer to the Freshwater Assessment undertaken by Scientific Aquatic Services
2.3.7.6	FEPA sub catchments, including- a) <i>the impacts of the proposed mining activities on habitat condition and species in the FEPA sub catchment;</i>	<i>*For descriptions on the presence of FEPAs, please refer to the Freshwater Assessment undertaken by Scientific Aquatic Services</i>
2.3.7.7	Indigenous forests, including: a) <i>impact on the ecological integrity of the forest; and</i> b) <i>percentage of natural or near natural indigenous forest area lost and a statement on the implications in relation to the remaining areas.</i>	Not Applicable. No forests associated with the application area
2.4	The findings of the assessment must be written up in a Terrestrial Biodiversity Specialist Assessment Report.	
	Section 4	
3	Terrestrial Biodiversity Specialist Assessment Report	
3.1	The Terrestrial Biodiversity Specialist Assessment Report must contain, as a minimum, the following information:	
3.1.1	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Part A: Appendix C
3.1.2	A signed statement of independence by the specialist;	Part A: Appendix C
3.1.3	A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 1.3
3.1.4	A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Section 2
3.1.5	A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;	Section 1.3
3.1.6	A location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	Section 5
	Impact Assessment Requirements 3.1.7 Additional environmental impacts expected from the proposed development; 3.1.8 Any direct, indirect and cumulative impacts of the proposed development;	N/A to this study. Only an Impact Statement provided in Section 6



	<p>3.1.9 The degree to which impacts and risks can be mitigated;</p> <p>3.1.10 The degree to which the impacts and risks can be reversed;</p> <p>3.1.11 The degree to which the impacts and risks can cause loss of irreplaceable resources;</p> <p>3.1.12 Proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);</p>	
3.1.13	A motivation must be provided if there were development footprints identified as per paragraph 2.3.6 above that were identified as having a “low” terrestrial biodiversity sensitivity and that were not considered appropriate;	Not Applicable to this report
3.1.14	A substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and	Section 6
3.1.15	Any conditions to which this statement is subjected.	Section 6
3.2	The findings of the Terrestrial Biodiversity Specialist Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which must be incorporated into the EMPr where relevant.	
3.3	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	



GLOSSARY OF TERMS

Most definitions are based on terms and concepts elaborated by Richardson et al. (2011), Hui and Richardson (2017), Wilson et al. (2017), Skowno et al. (2019), and SANBI (2016), with consideration to their applicability in the South African context, especially South African legislation [notably the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), and the associated Alien and Invasive Species Regulations, 2020].

Alien species (syn. <i>exotic species</i> ; <i>non-native species</i>)	A species that is present in a region outside its natural range due to human actions (intentional or accidental) that have enabled it to overcome biogeographic barriers.
Baseline (IEM Series)	Conditions that currently exist. Also called “existing conditions”.
Baseline information (IEM Series)	Information derived from data that: <ul style="list-style-type: none"> - records the existing elements and trends in the environment; and - records the characteristics of a given project proposal.
Biological diversity or Biodiversity (as per the definition in NEMBA)	The variability among living organisms from all sources including, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part and includes diversity within species, between species, and of ecosystems.
Biodiversity offset	For the purposes of the 2021 First Edition Offset guideline, means the measurable outcome of compliance with a formal requirement contained in an environmental authorisation to implement an intervention that has the purpose of counterbalancing the residual negative impacts of an activity, or activities, on biodiversity, through increased protection and appropriate management, after every effort has been made to avoid and minimise impacts, and rehabilitate affected areas.
Biodiversity priority areas	Features in the landscape or seascape that are important for conserving a representative sample of ecosystems and species, for maintaining ecological processes, or for the provision of ecosystem services. They include the following categories, most of which are identified based on systematic biodiversity planning principles and methods: Protected Areas, Critically Endangered and Endangered ecosystems, Critical Biodiversity Areas and Ecological Support Areas, Freshwater Ecosystem Priority Areas, high water yield areas, flagship free-flowing rivers, priority estuaries, Priority Areas for land-based protected area expansion, and Application areas for offshore protection. Marine ecosystem priority areas and coastal ecosystem priority areas have yet to be identified but will be included in future. The different categories <i>are not mutually exclusive</i> and, in some cases, overlap, often because a particular area or site is important for more than one reason. They should be <i>complementary</i> , with overlaps <i>reinforcing the importance</i> of an area.
Biome - as per Mucina and Rutherford (2006)	A broad ecological spatial unit representing major life zones of large natural areas – defined mainly by vegetation structure, climate, and major large-scale disturbance factors (such as fires).
Bioregion (as per the definition in NEMBA)	A geographic region which has in terms of section 40(1) been determined as a bioregion for the purposes of this Act.
Carrying Capacity	The maximum population size of a biological species that can be sustained by that specific environment, given the food, habitat, water, and other resources available.
Community Characterisation	Comparisons can be made among communities using attributes such as species richness, species diversity, and evenness. <ul style="list-style-type: none"> - Species richness is simply the number of species in a community. - Species diversity is more complex and includes a measure of the number of species in a community, and a measure of the abundance of each species.



	<ul style="list-style-type: none"> - Species evenness is a description of the distribution of abundance across the species in a community. Species evenness is highest when all species in a sample have the same abundance. Evenness approaches zero as relative abundances vary. <p>Source: https://tinyurl.com/2p9yr3j8</p>
Critical Biodiversity Area (CBA)	A CBA is an area considered important for the survival of threatened species and includes valuable ecosystems such as wetlands, untransformed vegetation, and ridges.
Critically Endangered (CR) (IUCN³ Red List category)	Applied to both species/taxa and ecosystems: A species is CR when the best available evidence indicates that it meets at least one of the five IUCN criteria for CR, indicating that the species is facing an extremely high risk of extinction. CR ecosystem types are at an extremely high risk of collapse. Most of the ecosystem type has been severely or moderately modified from its natural state. The ecosystem type is likely to have lost much of its natural structure and functioning, and species associated with the ecosystem may have been lost. CR species are those considered to be at extremely high risk of extinction.
Ecological Condition	<p>“ecological condition” means the extent to which the composition, structure and function of an area or biodiversity feature has been modified from a reference condition of “natural”.</p> <p>Various terminology can be used for precision of language:</p> <ul style="list-style-type: none"> - Fair ecological condition: Areas that are moderately modified, semi-natural. An ecological condition class in which ecological function is maintained even though composition and structure have been compromised. Can apply to a site or an ecosystem. - Good ecological condition: Areas that are natural or near-natural. An ecological condition class in which composition, structure and function are still intact or largely intact. Can apply to a site or an ecosystem. - Poor ecological condition: Areas that are severely or irreversibly modified. An ecological condition class in which ecological function has been compromised in addition to structure and composition. Can apply to a site or an ecosystem.
Ecological processes	The functions and processes that operate to maintain and generate biodiversity. In order to include ecological processes in a biodiversity plan, their spatial components need to be identified and mapped.
Ecological Support Area (ESA)	An ESA provides connectivity and important ecological processes between CBAs and is therefore important in terms of habitat conservation.
Ecoregion	An ecoregion is a "recurring pattern of ecosystems associated with characteristic combinations of soil and landform that characterise that region."
Endangered (EN) (IUCN Red List category)	Applied to both species/taxa and ecosystems: A species is EN when the best available evidence indicates that it meets at least one of the five IUCN criteria for EN, indicating that the species is facing a very high risk of extinction. EN ecosystem types are at a very high risk of collapse. EN species are those considered to be at very high risk of extinction.
Endemic species	Species that are only found within a pre-defined area. There can therefore be sub-continental (e.g., southern Africa), national (South Africa), provincial, regional, or even within a particular mountain range.
Faunal Class	In biological classification, class (Latin: classis) is a taxonomic rank, as well as a taxonomic unit. Class specifically refers to major groups, namely: mammals, avifauna (birds), reptiles and invertebrates.
Fatal flaw	As per the national biodiversity offset guideline issued under section 24J of the NEMA (First Edition (October 2021): means a major defect or deficiency in a project proposal that should result in environmental authorisation being refused, and from a biodiversity perspective, a

³ International Union for Conservation of Nature (IUCN)



	residual negative impact that would have a Very High significance rating as determined in Chapter 6.2 of the offset guidelines.
Ground-truth	Ground truth is a term used in various fields to refer to information provided by direct observation (i.e., empirical evidence) as opposed to information provided by inference.
Habitat (As per the definition in NEMBA)	A place where a species or ecological community naturally occurs.
Habitat loss	Conversion of natural habitat in an ecosystem to a land use or land cover class that results in irreversible change in the composition, structure and functional characteristics of the ecosystem concerned.
Important Bird and Biodiversity Area (IBA)	The IBA Programme identifies and works to conserve a network of sites critical for the long-term survival of bird species that: are globally threatened, have a restricted range, are restricted to specific biomes/vegetation types or sites that have significant populations.
Integrity (ecological)	The integrity of an ecosystem refers to its functional completeness, including its components (species) its patterns (distribution) and its processes.
Invasive species	Alien species that sustain self-replacing populations over several life cycles, produce reproductive offspring, often in very large numbers at considerable distances from the parent and/or site of introduction, and have the potential to spread over long distances.
Least Threatened	Least threatened ecosystems are still largely intact.
Listed invasive species	All alien species that are regulated in South Africa under the NEMBA, Alien and Invasive Species Regulations, 2020.
Native species (syn. indigenous species)	Species that are found within their natural range where they have evolved without human intervention (intentional or accidental). Also includes species that have expanded their range as a result of human modification of the environment that does not directly impact dispersal (e.g., species are still native if they increase their range as a result of watered gardens but are alien if they increase their range as a result of spread along human-created corridors linking previously separate biogeographic regions).
Near Threatened (according to IUCN)	Close to being at high risk of extinction in the near future.
Niche (ecological)	The role and position a species have in its environment; how it meets its needs for food and shelter, how it survives, and how it reproduces. A species' niche includes all of its interactions with the biotic and abiotic factors of its environment.
Red Data Listed (RDL) species	According to the Red List of South African plants (http://redlist.sanbi.org/) and the International Union for Conservation of Nature (IUCN), organisms that fall into the Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU) categories of ecological status.
Refugia (ecological)	Refugium (plural: refugia) is a location which supports an isolated or relict population of a once more widespread species. This isolation can be caused by climatic changes, geography, or human activities such as deforestation and overhunting.
Residual biodiversity impact	A residual biodiversity impact is the impact of an activity, or activities, on biodiversity that remains after all efforts have been made to avoid and minimise the impacts of the activity, or activities, and to rehabilitate or restore the affected area to the fullest extent possible.
Resource (ecological)	A resource is a substance or object in the environment required by an organism for normal growth, maintenance, and reproduction. Resources can be consumed by one organism and, as a result, become unavailable to another organism.
Species of Conservation Concern (SCC)	The term SCC in the context of this report refers to all RDL and IUCN listed threatened species as well as provincially and nationally protected species of relevance to the project.
Threatened ecosystem	An ecosystem that has been classified as CR, EN or VU, based on an analysis of ecosystem threat status. A threatened ecosystem has lost or is losing vital aspects of its structure, function, or composition. The



	NEMBA allows the Minister of Environmental Affairs or a provincial MEC for Environmental Affairs to publish a list of threatened ecosystems. To date, threatened ecosystems have been listed only in the terrestrial environment. In cases where no list has yet been published by the Minister, such as for all aquatic ecosystems, the ecosystem threat status assessment in the National Biodiversity Assessment (NBA) can be used as an interim list in planning and decision making.
Threatened species	A species that has been classified as CR, EN or VU, based on a conservation assessment (Red List), using a standard set of criteria developed by the IUCN for determining the likelihood of a species becoming extinct. A threatened species faces a high risk of extinction in the near future.
Vulnerable (VU) (Red List category)	Applied to both species/taxa and ecosystems: A species is VU when the best available evidence indicates that it meets at least one of the five IUCN criteria for VU, indicating that the species is facing a high risk of extinction. An ecosystem type is VU when the best available evidence indicates that it meets any of the criteria A to E for VU and is then considered to be at a high risk of collapse.



LIST OF ACRONYMS

a.s.l.	above sea level
AIP	Alien and Invasive Plant
BA	Basic Assessment
BGIS	Biodiversity Geographic Information Systems
CARA	Conservation of Agricultural Resources Act, 1983 [Act No. 43 of 1983]
CBA	Critical Biodiversity Area
CR	Critically Endangered
DEA	Department of Environmental Affairs
DFFE	Department of Forestry, Fisheries and the Environment
DMRE	Department of Minerals, Resources and Energy
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EEDL	Ephemeral Drainage Line
E-GIS	Environmental Geographical Information Systems
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EMA	Environmental Management Assistance [Pty] Ltd
EMPr	Environmental Management Programme
EN	Endangered
ESA	Ecological Support Area
EW	Extinct in the Wild
GIS	Geographic Information System
GN	Government Notice
GPS	Global Positioning System
Ha	Hectares
HGM	Hydrogeomorphic
IBA	Important Bird and Biodiversity Area
IEM	Integrated Environmental Management
IUCN	International Union for Conservation of Nature
km	kilometres
LC	Least Concern
LCPE	Lydenburg Centre of Plant Endemism
LEMA	Limpopo Environmental Management Act, 2003 [Act No.7 of 2003]
MAP	Mean annual precipitation
MAPE	Mean Annual Potential Evaporation
masl	Meters Above Mean Sea Level
MASMS	Mean Annual Soil Moisture Stress
MAT	Mean Annual Temperature
MFD	Mean Frost Days
NBA	National Biodiversity Assessment
NEMA	National Environmental Management Act, 1998 [Act No. 107 of 1998]
NEMBA	National Environmental Management: Biodiversity Act, 2004 [Act No. 10 of 2004]
NEMPAA	National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]
NFA	National Forest Act, 1998 [Act No. 84 of 1998]
NFEPA	National Freshwater Ecosystem Priority Areas
NP	Not Protected
NPAES	National Protected Area Expansion Strategy
NT	Near Threatened
P	Protected
PES	Present Ecological State
PGM	Platinum Group Metals
POC	Probability of Occurrence



PP	Poorly Protected
QDS	Quarter Degree Squares
RDL	Red Data listed
RLE	Red List of Ecosystems
SABAP 2	South African Bird Atlas Project 2
SACAD	South African Conservation Areas Database
SACNASP	South African Council for Natural Scientific Professions
SANBI	South African National Biodiversity Institute
SanParks	South African National Parks
SAPAD	South African Protected Areas Database
SCC	Species of Conservation Concern
SCPE	Sekhukhune Centre of Plant Endemism
STS	Scientific Terrestrial Services (Pty) Ltd
SWSA	Strategic Water Source Areas
T	Threatened
VEGMAP	Vegetation Map Project
VU	Vulnerable
WSA	Water Source Area



1 INTRODUCTION

Scientific Terrestrial Services (Pty) Ltd (STS) was appointed by Environmental Management Assistance (Pty) Ltd (EMA), the Environmental Assessment Practitioner (EAP), to verify the presence of terrestrial biodiversity features (i.e., fauna and flora) within the Farm Mareesburg 8 JT, where Nomamix (Pty) Ltd (the applicant) is applying for the right to prospect for Platinum Group Metals (PGM); hereafter referred to as the “**application area**” (2133.29 hectares (ha)) – refer to Figures 1 – 2.

STS was required to report on aspects of terrestrial biodiversity (fauna and flora) triggered by the National Web-based Environmental Screening Tool (“**Screening Tool**” hereafter). In addition, it was required to provide input into any development constraints or enviro-legal constraints that may arise for the proposed prospecting rights application within the application area in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended (NEMA), the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA), and the Limpopo Environmental Management Act, 2003 (Act No. 7 of 2003) (LEMA) – refer also to section 1.4 of this report. STS was required to, if necessary, assess the risk (if any) that the proposed prospecting rights application may pose to the receiving environment.

The application area is located on the Farm Mareesburg 8 JT (Portions 0, 1, 2, 6, and 7), in the magisterial district of Fetagoma Tubatse (and Sekhukhune District Municipalities), Limpopo. The application area is situated approximately 34 kilometres (km) southwest of Steelpoort and 45 km west of Lydenburg (the application area borders the Mpumalanga Province along its eastern extent). The site is in a largely remote setting that is accessed mainly by smaller roads and some informal/gravel roads. The nearest main roads include the R555 (\pm 24 km – 19 km west and north of the site) and the R37 (\pm 21 km east of the site).

The aim of this report is to identify preliminary areas of increased sensitivity or importance associated with the application area that could place constraints on planned activities, and to determine if there are any fatal flaws with regards to sensitive habitat that is suitable for Species of Conservation Concern (SCC). The report includes a detailed desktop study highlighting the Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) of the application area based on several databases, as well as high-level reporting on field-verified results.



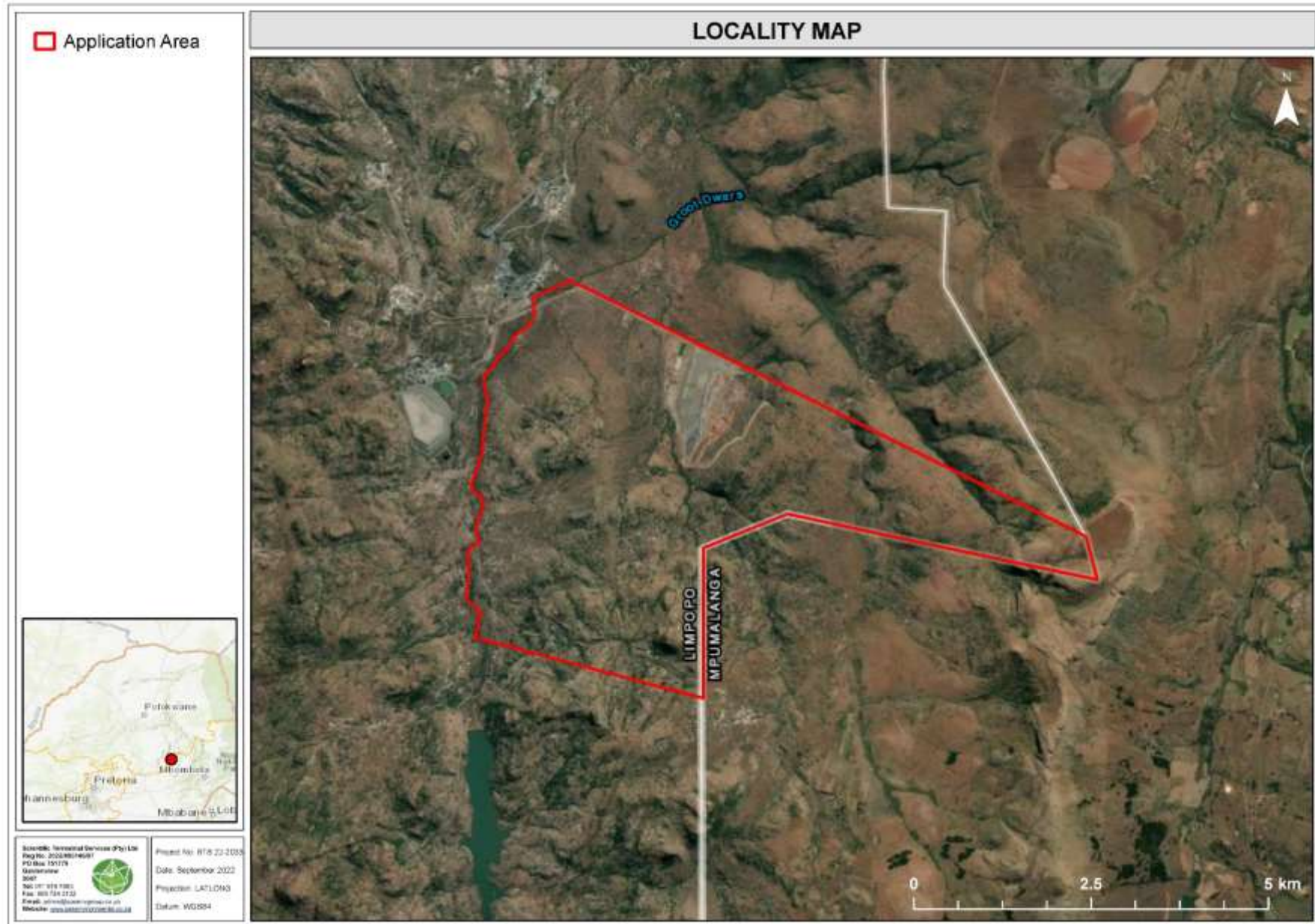


Figure 1: Digital satellite image depicting application area in relation to surrounding area.



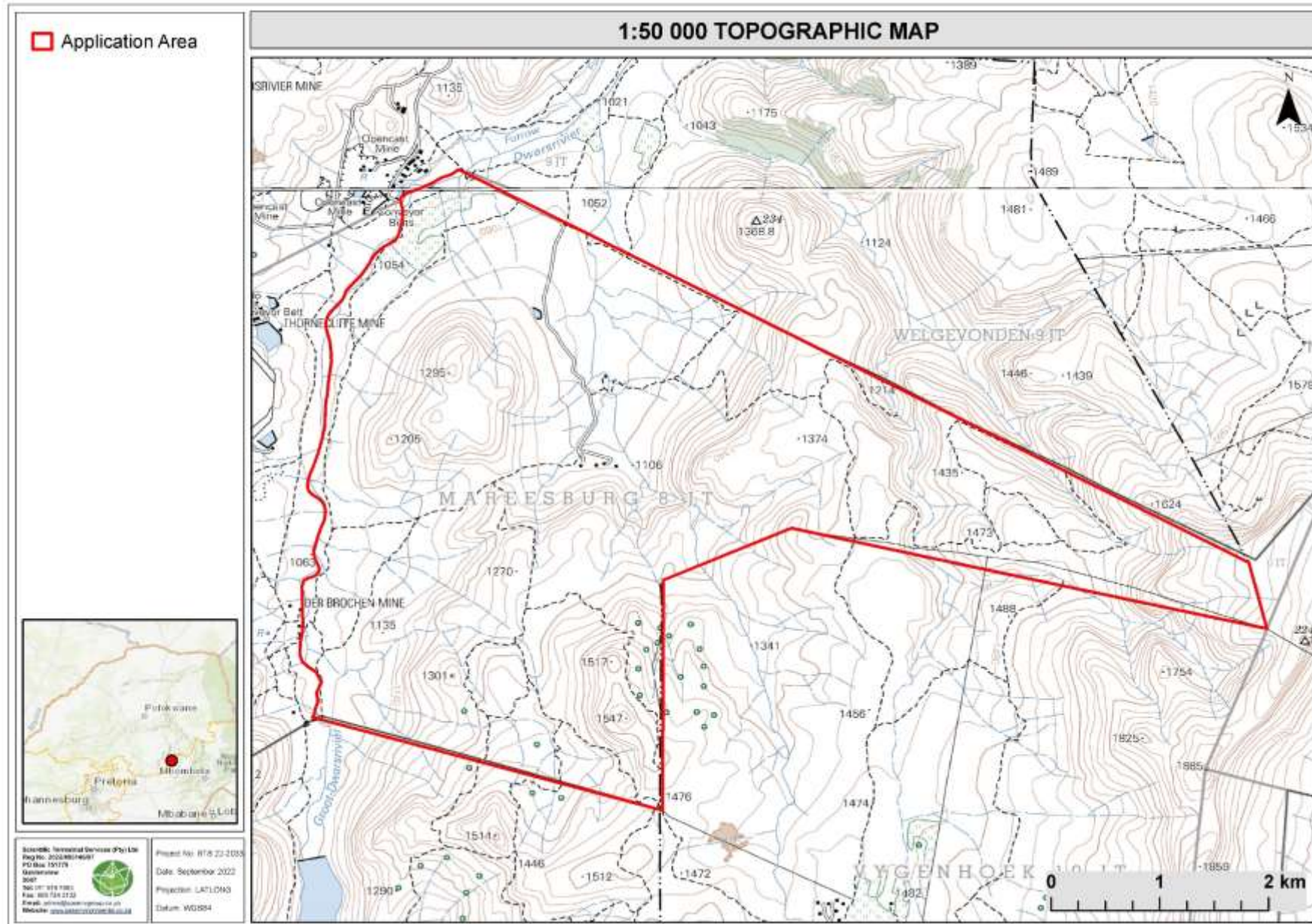


Figure 2: The application area depicted on a 1:50 000 topographical map in relation to the surrounding area.



1.1 Project Description⁴

The applicant is applying for the right to prospect Platinum Group Metals on the Farm Mareesburg 8 JT, in the magisterial district of Fetagoma Tubatse, Limpopo. The proposed non-invasive prospecting activities will include the following main techniques:

- Data search, field mapping and desktop studies;
- Logging and sampling historical core; and
- Scoping and (pre) feasibility studies.

Due to non-intrusive prospecting, the desktop and site verification information from the specialist will inform the BA Report & Environmental Management Programme (EMPr). Should additional sampling be required using any invasive prospecting methods, the areas where these activities will take place will require the necessary assessments as per the various protocols published for identified themes and approval from the Department of Minerals, Resources and Energy (DMRE), prior to commencement of any such activities.

1.1.1 Scope of Data search, Field Mapping and Desktop Studies

Tracing and purchasing of all available geological data in the form of geological maps, geochemical and geophysical surveys, gravimetric, radiometric, magnetic, seismic data, remote sensing data, borehole data, as well as any information pertaining to previous invasive or non-invasive exploration will be consulted and integrated. All data from the old and current mining operations will be sourced, like geological, mining maps, survey maps, assay maps, laboratory results and any other reports or information relevant. As soon as this data is located and gathered, all relevant information will be analysed for the relevance to the project. Non-digital information will be successively scanned and captured in digital format.

All information (soft and hard copies) will be QA/QC'ed to assess their value relevant to internationally recognised compliant resource estimation. The above and any additional knowledge will be integrated into a geological database for the area that will be used to present the relevant geological data in electronic formats. These data sets will be plotted on a base map of the project and surrounding areas to develop a geological model that elucidates resource potential. This model will be used to further refine the exploration programme for the target area. 2D and 3D geological models will be initiated.

⁴ Project description was provided by the EAP.



A reconnaissance field visit will be undertaken to identify any factors that may impact the exploration programme, to familiarise the applicant with surface features in the project area (such as infrastructure and outcrops) and to meet the landowners/ occupants. During this visit, property boundaries within the project area and farming and all activities will be verified. This will be followed up by detailed geological field mapping. Geological features, in combination with existing maps, remote sensing images, etc. will be mapped in a professional way. The field mapper will also take grab samples for further analyses and potential assaying. The gathered data will be compared with historical information and so will steer the field exploration in focusing on potential targets.

1.1.2 Scope of Logging and Sampling of Historical Core

If any historical core can be found, at least ten percent of the (usually) halved core will be logged in detail and sampled professionally and according to industry standards. The samples will be submitted to an accredited laboratory for analysis. This exercise will be needed for QA/QC purposes and confirmation of the historical data.

1.2 Scope of Work

Specific outcomes in terms of Part A of the report are as follows:

- To compile a desktop assessment with all relevant information as presented by South African National Biodiversity Institute's (SANBI's) Biodiversity Geographic Information Systems (BGIS) website (<http://bgis.sanbi.org>) and the Environmental Geographical Information Systems (E-GIS) website (<https://egis.environment.gov.za/>). The desktop assessment aims to gain background information on the physical habitat and potential floral and faunal ecology associated with the application area;
- To state the indemnity and terms of use of this report (Appendix A) as well as to provide the details of the specialists who prepared the reports (Appendix C);
- To outline the legislative requirements that were considered for the assessment (Appendix B of this report);
- To verify the outcome of the Screening Tool;
- To define the PES of the biodiversity (fauna and floral) of the application area;
- To determine and describe (at a high-level) habitats, communities, and the ecological state of the application area;
- To identify and consider all sensitive landscapes, including rocky ridges, wetlands or any other special features such as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs); and



- To provide a statement, if necessary, on the potential for environmental impacts to arise from the proposed activities.

1.3 Assumptions, Limitations, and Gaps in Knowledge

The following assumptions and limitations are applicable to this report:

- The biodiversity desktop assessment is confined to the application area and does not include detailed results of the surrounding areas or adjacent properties, although ecologically important or sensitive areas according to the desktop databases of the surrounding areas have been included on the relevant maps;
- It is important to note that although all data sources used provide useful and often verifiable, high-quality data, the various databases used do not always provide an entirely accurate indication of the assessed area's actual site characteristics at the scale required to inform more intricate planning, e.g., at the scale needed for Environmental Authorisation (EA). Nevertheless, this information is useful as background information to the study and is important in legislative contextualisation of risk and impact and was used as a guideline to inform the biodiversity assessment, and to focus on areas and aspects of increased conservation importance. It must, however, be noted that site assessment of key areas may potentially contradict the information contained in the relevant databases, in which case the site verified, ground-truthed information must carry more weight in the decision-making process;
- With ecology being dynamic and complex, some aspects (some of which may be important) may have been overlooked. One high-level field verification of the application area was conducted (29 August – 31 August 2022) to determine the ecological status of the habitat associated with the application area, and to “ground-truth” the results of the desktop assessment. Winter assessments are not ideal from either a floral or faunal perspective, and many anticipated species were not present during the site verification. However, additional information gathered from various databases, literature reviews, and experience in the area were used to augment the current findings and to further infer species composition, sensitivities and ecological characteristics of the application area;
- Sampling, by its nature, means that not all individuals are assessed and identified. Some species and taxa associated with the application area may have been missed during the assessment. It is, however, expected that most floral and faunal communities have been accurately assessed and considered. Relevant online sources and background information were further assessed to improve on the overall understanding of the application area's ecology; and



- As per the best practise guideline that accompanies the SANBI protocol and the Screening Tool, the name of the certain sensitive species may not appear in the final Environmental Impact Assessment (EIA) report nor any of the specialist reports released into the public domain. It will be referred to as sensitive plants or sensitive animals, and its threat status included, e.g., critically endangered sensitive plant.

1.4 Legislative Requirements

The following legislative requirements were considered during the assessment:

- The Constitution of the Republic of South Africa, 1996⁵;
- The Conservation of Agricultural Resource Act, 1983 (Act 43 of 1983) (CARA);
- The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA);
- The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA);
 - Government Notice (GN) number 1002: National List of Ecosystems that are Threatened and Need Protection dated 9 December 2011, as it relates to the NEMBA;
 - GN number R.1020: Alien and Invasive Species Regulations, 2020, in Government Gazette 43735 dated September 2020 as it relates to the NEMBA;
 - GN number 1003: Legislation to come into force on the 1st of June 2022: Government Notice number 1003: Alien and Invasive Species Lists, 2020, in Government Gazette 43726 dated 18 September 2020, as it relates to the NEMBA; and
 - GN number 30568: Threatened or Protected Species (TOPS) list dated 14 December 2007, as it relates to the NEMBA;
- The National Forest Act, 1998 (Act No. 84 of 1998, amended) (NFA);
 - GN 1935: List of Protected Tree Species as published in the Government Gazette 46094 dated 25 March 2022, as it relates to the NFA;
- The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEMPAA);
- Government Gazette 45421 dated 10 May 2019 as it relates to the DFFE's national environmental screening report required with an application for environmental authorisation as identified in regulation 16(1)(v) of EIA Regulations:

⁵ Since 1996, the Constitution has been amended by seventeen amendments acts. The Constitution is formally entitled the 'Constitution of the Republic of South Africa, 1996'. It was previously also numbered as if it were an Act of Parliament – Act No. 108 of 1996 – but since the passage of the Citation of Constitutional Laws Act, neither it nor the acts amending it are allocated act numbers.



- For the Terrestrial Biodiversity Theme: GN 320 Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity as published in Government Gazette 43110 dated 20 March 2020; and
- For Animal and Plant Species Themes: GN 1150 Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant and Animal Species as published in Government Gazette 43855 dated 30 October 2020;
 - The Limpopo Environmental Management Act, 2003 (Act No.7 of 2003) (LEMA).

The details of each of the above, as they pertain to this study, are provided in Appendix B of this report.

2 ASSESSMENT APPROACH

The below sections outline the approach taken to complete this study.

2.1 Desktop Research Approach

Maps and digital satellite images were generated prior to the field assessment to determine broad habitats, vegetation types and potentially sensitive sites. The biodiversity desktop assessment is confined to the application area and does not include the neighbouring and adjacent properties, although the sensitivity of surrounding areas is included on the respective maps. Relevant databases and documentation that were considered during the assessment of the application area include ⁶:

- The National Protected Areas Expansion Strategy (NPAES) – 2018 database;
- The South African Conservation Areas Database, Quarter 1 (SACAD, 2022);
- The South African Protected Areas Database, Quarter 1 (SAPAD, 2022);
- Limpopo Province Map of Critical Biodiversity Areas and Ecological Support Areas 2018 (Desmet, 2013; Limpopo Department of Economic Development & Tourism, 2018):
 - This is the Map of Critical Biodiversity Areas and Ecological Support Areas (CBA Map) produced by the Limpopo Conservation Plan V2 (LCPv2, 2013),

⁶ Datasets obtained from:

- SANBI BGIS (2022). The South African National Biodiversity Institute - Biodiversity GIS (BGIS) [online]. URL: <http://bgis.sanbi.org>; and
- Department of Environmental Affairs (DEA) Environmental Geographical Information Systems (E-GIS) website. URL: <https://egis.environment.gov.za/>



and updated consecutively and individually for the Waterberg (2015), Mopani (2016), Vhembe (2017), Sekhukhune (2018) and Capricorn (2018) district municipalities as part the compilation of bioregional plans for these municipalities;

- The National Vegetation Map Project (VEGMAP), with the below vector dataset used for information on Biomes, Bioregions and Vegetation Type(s):
 - 2018 Final Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2018a);
- The National List of Threatened Ecosystems 2011 (SANBI 2011; South Africa, 2011) as well as the 2021 Red List of Ecosystems (SANBI 2021a and b);
- From the National Biodiversity Assessment (NBA, 2018) Terrestrial Assessment project (Skowno et al., 2019):
 - 2018 Terrestrial ecosystem threat status and protection level - remaining extent (SANBI, 2018b); and
 - 2018 Terrestrial ecosystem threat status and protection level layer (SANBI, 2018c);
- The Important Bird and Biodiversity Areas (IBA) Programme and vector dataset (BirdLife South Africa, 2015; Marnewick et al., 2015a and 2015b), in conjunction with the South African Bird Atlas Project 2 (SABAP 2);
- The International Union for Conservation of Nature (IUCN);
- The 2013 Mining and Biodiversity Guidelines utilising the Mining and Biodiversity Guidelines 2012 Raster dataset (SANBI, 2012); and
- From the 2017 Strategic Water Source Areas (SWSA) project:
 - 2017 SWSA Surface water (Water Research Commission, 2017).

2.2 General Approach

A high-level, on-site visual assessment of the application area was conducted to confirm the assumptions made during the consultation of the background maps and to determine whether the ecological status of the habitat associated with the application area confirms the outcomes of the Screening Tool.

2.3 Sensitivity Mapping

All the ecological features associated with the application area were considered, and sensitive areas were delineated using a Global Positioning System (GPS). A Geographic Information System (GIS) was used to project these features onto satellite imagery.



2.4 Consideration of the Department of Forestry, Fisheries and Environment (DFFE) web-based environmental Screening Tool.

The protocol for the assessment of terrestrial biodiversity, animal species, and plant species prepared in support of the DFFE (previously the Department of Environmental Affairs (DEA)) Screening Tool (accessed 2022), provides the criteria for the assessment and reporting of impacts on terrestrial biodiversity for activities requiring EA. For terrestrial biodiversity, the requirements are for landscapes and/or sites which support various levels of threatened or unique biodiversity. The relevant faunal and floral biodiversity data is stated in the Screening Tool and has been provided by the SANBI. Based on the sensitivity rating, a suitably qualified specialist must prepare the relevant report or opinion memorandum which is to be submitted as part of the EA application.

Refer to section 3.2 for the outcome of the Screening Tool as it relates to the application area. Sections 4 and 5 provides the verified results of the site assessment and how these relate to the Screening Tool outcome.

3 RESULTS OF THE DESKTOP ANALYSIS

3.1 Conservation Characteristics of the Application Area based on National and Provincial Datasets

The following section contains data accessed as part of the desktop assessment and are presented as a “dashboard” report below (Table 1). The dashboard report aims to present concise summaries of the data on as few pages as possible to allow for improved assimilation of results by the reader to take place. Where required, further discussion and interpretation are provided.



Table 1: Database summaries of the vegetation characteristics associated with the application area [Quarter Degree Squares (QDS) 2530AA].

DESCRIPTION OF THE VEGETATION TYPE(S) RELEVANT TO THE APPLICATION AREA ACCORDING TO THE 2018 FINAL VEGETATION MAP OF SOUTH AFRICA, LESOTHO, AND SWAZILAND (SANBI 2006–2018 & SANBI, 2018A)					
BIOMES AND BIOREGIONS FIGURE 3	Most of the application area is in the Savanna Biome (and Central Bushveld Bioregion) . Small sections in the east and south, however, occur in the Grassland Biome (and Mesic Highveld Grassland Bioregion) .				
DESCRIPTION OF THE VEGETATION TYPES ASSOCIATED WITH THE APPLICATION AREA ACCORDING TO MUCINA & RUTHERFORD (2006) - ORIGINAL EXTENT OF VEGETATION TYPES (FIGURE 3)					
The application area occurs in three vegetation types. The remaining extent of these vegetation types are mapped in Figure 4 (based on the 2018 NBA database). The below section includes description of the vegetation types as per Mucina and Rutherford (2006). The updated conservation status is provided in the section discussing the NBA (2018) database.					
SEKHUKHUNE MOUNTAIN BUSHVELD (SVCB 28)					
DISTRIBUTION	Limpopo and Mpumalanga Provinces.				
CLIMATE	Summer rainfall with very dry winters.				
	MAP (mm)	MAT (°C)	MFD (days)	MAPE (mm)	MASMS (%)
	609	17.5	5	2043	77
ALTITUDE (M)	900–1 600 m				
GEOLOGY & SOILS⁷	Rocks mainly ultramafic intrusive of the lower, critical and main zones of the eastern Rustenberg Layered Suite of the Bushveld Igneous Complex (Vaalian). Three subsuites (zones), namely Croydon, Dwars River and Dsjate consist mainly of norite, pyroxenite, anorthosite and gabbro, and are characterised by localised intrusions of magnetite, diorite, dunite, bronzitite and harzburgite. Soils are predominantly shallow, rocky and clayey. Glenrosa and Mispah soil forms are common, with lime present in low-lying areas. Rocky areas without soil are common on steep slopes. The Dwars River Valley is characterised by prismatic horizons with melanic structured diagnostic horizons. Around Steelpoort red apedal, freely drained soils occur, and these deeper soils include Hutton, Bonheim and Steendal soil forms.				
CONSERVATION	Least threatened. Target 24%. None conserved in statutory conservation areas.				
VEGETATION & LANDSCAPE FEATURES	Dry, open to closed microphyllous ⁸ and broad-leaved savanna on hills and mountain slopes that form concentric belts parallel to the north-eastern escarpment. Open bushveld often associated with ultramafic soils on southern aspects. Bushveld on ultramafic soils contain a high diversity of edaphic specialists. Bushveld of mountain slopes generally taller than in the valleys, with a well-developed herb layer. Bushveld of valleys and dry northern aspects usually dense, like thicket, with an herb layer comprising many short-lived perennials. Dry habitats contain several species with xerophytic adaptations, such as succulence and underground storage organs. Both man-made and natural erosion dongas occur on foot slopes of clays rich in heavy metals.				

⁷ Land types refer to a class of land with specified characteristics. In South Africa it has been used as a unit denoting land at 1:250 000 scale, over which there is a marked uniformity of climate, terrain form and soil pattern. Land type Ea refers to dark, blocky clay topsoil (often swelling clays) and/or red, structured clays. Land type categories are as follows: Bb = Non-red (Hu, Bv <33%); dystrophic/mesotrophic > eutrophic; Ba = Non-red (Hu, Bv <33%); dystrophic/mesotrophic > eutrophic but with < 10 % clay soils (ARC: Land Type Survey Staff. 1972 – 2006).

⁸ Microphyllus - having very small leaves. From micro meaning small and phyllous referring to leaves.



SEKHUKHUNE MONTANE GRASSLAND (GM 19)					
DISTRIBUTION	Continuous undulating norite hills in the Roossenekal region, from Stoffberg in the south, northwards through Mapochs Gronde to Schurinksberg in the north, with the Steelpoort River in the west.				
CLIMATE	This unit experiences a similar climate to the adjacent Lydenburg Montane Grassland, although frost incidence decreases towards the north. Summer-rainfall regime with the MAP from about 720 mm in the east to 600 mm in the west, much of the rain falling in the form of thunderstorms in summer from November to January.				
	MAP (mm)	MAT (°C)	MFD (days)	MAPE (mm)	MASMS (%)
	688	15.3	17	1983	75
ALTITUDE (M)	1 300 – 1 960 m				
GEOLOGY & SOILS⁹	The area mostly overlies the mafic intrusive rocks of the Upper and Main Zones of the Rustenburg Layered Suite, which is economically the most important part of the Bushveld Igneous Complex (Vaalian Erathem). The west of this area is dominated by diorite and gabbro (often magnetite-rich) of the Roossenekal Subsuite, whereas the east is dominated by gabbro and norite of the Dsjate Subsuite. In the extreme northeast of the area are metasediments of the Pretoria Group (also Vaalian Erathem) that were metamorphosed by the intrusion of the Bushveld Igneous Complex. Substrates of the undulating hills are generally heterogeneous rocky areas with miscellaneous soil types and those of the southern plains have diagnostic horizons that are vertic, melanic or red-structured. Dominant soil forms have a high clay content and include Arcadia, Mayo, Milkwood, Mispah, Shortlands and Steendal. Ea land type covers 40% of the area, with minor occurrences of Ib and Ab.				
CONSERVATION	Vulnerable (VU) according to Mucina and Rutherford (2006) but the status has been changed to Least Concern (LC) according to the updated VegMAP project (SANBI 2006-2018). Conservation target 24%. Approximately 30% of this area is under commercial or subsistence cultivation. Vast areas are mined for vanadium using strip mining, and in recent years mining of gabbro has increased substantially (Siebert et al. 2002c). There is no formal conservation in the region, although many farmers have embarked on ecotourism initiatives. Erosion very low (56%), moderate (18%) and high (16%).				
VEGETATION & LANDSCAPE FEATURES	Major chains of hills transect the area and have a north-south orientation, creating moderately steep slopes with predominantly eastern and western aspects. Large norite boulders and stones cover the shallow soils on the hillsides. Dense, sour grassland occur on slopes of mountains and undulating hills, with scattered clumps of trees and shrubs in sheltered habitats. Turf and clay soils characterise the open plains between the chains of hills and culminate in an open plain in the Stoffberg area. Dense, tall grassland is found on the plains and encroachment by indigenous or invasion by alien microphyllous tree species is common in places.				
STEENKAMPSBERG MONTANE GRASSLAND (GM 30)					
DISTRIBUTION	Occurring along the Steenkampsberg escarpment that extends from the headwaters of the Waterval River in mountains north-west of Lydenburg, extending southwards through Dullstroom towards Belfast, then eastwards through Machadodorp to Bambi and Elandshoogte				
CLIMATE	Climate is a seasonally arid temperate region with hot summers and cool and dry winters.				
	MAP (mm)	MAT (°C)	MFD (days)	MAPE (mm)	MASMS (%)
	789	14.1	23	1835	23
ALTITUDE (M)	2330 m (highest point)				

⁹ Land types refer to a class of land with specified characteristics. In South Africa it has been used as a unit denoting land at 1:250 000 scale, over which there is a marked uniformity of climate, terrain form and soil pattern. Land type Ea refers to dark, blocky clay topsoil (often swelling clays) and/or red, structured clays. Land type categories are as follows: Bb = Non-red (Hu, Bv <33%); dystrophic/mesotrophic > eutrophic; Ba = Non-red (Hu, Bv <33%); dystrophic/mesotrophic > eutrophic but with < 10 % clay soils (ARC: Land Type Survey Staff. 1972 – 2006).



<p>GEOLOGY & SOILS¹⁰</p>	<p>The geology broadly forms part of the Pretoria Group, with the Dullstroom, Steenkampsberg, Lakenvlei, Vermont, Magaliesberg, Silverton, Strubenkop, Daspoort, Hekpoort, and Timeball Hill Formations running from the west through to the east. The Pretoria Group is commonly intersected by the intrusive Transvaal Diabase in the form of dykes and sills. The resulting rocks are predominantly comprised of quartzite, shale, dolerite, diabase and basalt.</p> <p>Soils are shallow to deep, well-drained; either dystrophic and/or mesotrophic depending on geology. Soil derived from quartzite results in sandy, white dystrophic soils with high humus content.</p>
<p>CONSERVATION</p>	<p>Much of this unit is still natural (74.7%) although some parts have been afforested (14%) or cultivated (4%) with crops such as maize and to a lesser extent peach orchards. As much as 6% of this is comprised of old abandoned cultivated lands. Mining is a threat (0.25%) as this unit overlies considerable mineral wealth. This unit is poorly protected as only 12.4% of its national target of 27% is formally protected.</p>
<p>VEGETATION & LANDSCAPE FEATURES</p>	<p>The landscape is mountainous with plateau grasslands, mountain slopes and shallow valleys. Grasslands are short with high forb diversity. The highest point in Mpumalanga (2330 m) occurs just north of the Steenkampsberg Pass.</p> <p>Remarks A floristic analysis of the vegetation along the Mpumalanga escarpment supports the recognition of a new centre of plant endemism (Lydenburg Centre) with the proposal of two subcentres of plant endemism, namely the Long Tom Pass Subcentre and the Steenkampsberg subcentre. The Steenkampsberg subcentre has at least 15 endemic taxa.</p>
<p align="center">DESCRIPTION OF THE VEGETATION TYPES ASSOCIATED WITH THE APPLICATION AREA IN TERMS OF THE NATIONAL BIODIVERSITY ASSESSMENT (NBA) 2018 DATASET - REMAINING EXTENT OF VEGETATION TYPES (FIGURE 4)</p>	
<p>NATIONAL BIODIVERSITY ASSESSMENT (NBA) (2018)</p> <p>FIGURE 4</p>	<p>As mentioned previously, three vegetation types are associated with the application area. The NBA database indicates that the associated vegetation types are largely still intact, with only small sections transformed. Most of the application area is associated with the Sekhukhune Mountain Bushveld which is listed as LC and is currently Poorly Protected (PP). The rest of the application area (eastern section thereof) is associated with two montane grassland vegetation types, namely the Sekhukhune Montane Grassland, currently listed as LC but is Not Protected (NP), and the Steenkampsberg Montane Grassland listed as LC, and which is currently PP.</p> <p>The NBA is the primary tool for monitoring and reporting on the state of biodiversity in South Africa. Two headline indicators that are applied to both ecosystems and species are used in the NBA: threat status and protection level:</p> <ol style="list-style-type: none"> i. Ecosystem threat status tells us about the degree to which ecosystems are still intact or alternatively losing vital aspects of their structure, function, and composition, on which their ability to provide ecosystem services ultimately depends. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), VU or LC, based on the proportion of each ecosystem type that remains in good ecological condition relative to a series of thresholds. ii. Ecosystem protection level tells us whether ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Not Protected, Poorly Protected, Moderately Protected or Well Protected, based on the proportion of each ecosystem type that occurs within a protected area recognised in the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEMPAA).

¹⁰ Land types refer to a class of land with specified characteristics. In South Africa it has been used as a unit denoting land at 1:250 000 scale, over which there is a marked uniformity of climate, terrain form and soil pattern. Land type Ea refers to dark, blocky clay topsoil (often swelling clays) and/or red, structured clays. Land type categories are as follows: Bb = Non-red (Hu, Bv <33%); dystrophic/mesotrophic > eutrophic; Ba = Non-red (Hu, Bv <33%); dystrophic/mesotrophic > eutrophic but with < 10 % clay soils (ARC: Land Type Survey Staff. 1972 – 2006).



2021 RED LIST OF ECOSYSTEMS (RLE) FOR TERRESTRIAL REALM FOR SOUTH AFRICA- REMAINING EXTENT OF VEGETATION TYPES (FIGURE 4)

The 2021 RLE contains the current remaining natural extent (circa 2018) of each of the 458 ecosystem types assessed. This means that those portions of ecosystems that have been lost to anthropogenic activities such as mining or croplands are excluded and only the remnants are part of the dataset. The 2021 RLE largely aligns with the NBA (SANBI, 2018a) dataset presented above, but has excluded more transformed areas (i.e., the remaining extent is smaller).

As with the NBA dataset, three vegetation types are associated with the application area, namely the **Sekhukhune Mountain Bushveld (LC)**, the **Sekhukhune Montane Grassland (LC)**, and the **Steenkampsberg Montane Grassland (LC)**. Refer to Figure 5. The dataset further indicates that all three of these ecosystems are **endemic** to South Africa.

The revised list (known as the Red List of Ecosystems 2021) is based on assessments that followed the International Union for Conservation of Nature (IUCN) Red List of Ecosystems Framework (version 1.1) and covers all 456 terrestrial ecosystem types described in South Africa (Mucina and Rutherford 2006; with updates described in Dayaram et al., 2019). The revised list identifies 120 threatened terrestrial ecosystem types (55 Critically Endangered, 51 Endangered and 14 Vulnerable types).

Following a series of consultations with national, provincial and metropolitan conservation authorities in 2020/1 the Red List of Ecosystem 2021 was approved by the Minister for public comment in June 2021. The Red List of Ecosystem 2021 will replace the current 2011 National Environmental Management: Biodiversity Act (NEMBA) (Act 10 of 2004): National List of Ecosystems Threatened or in Need of Protection. The Red List of Ecosystems was published in the Government Gazette on November 5th 2021 for public comments (Gazette Notice No. 1476). Following the publication of the Gazette Notice, comments can be submitted to the Department of Forestry, Fisheries and the Environment, Pamela Kershaw PKershaw@environment.gov.za



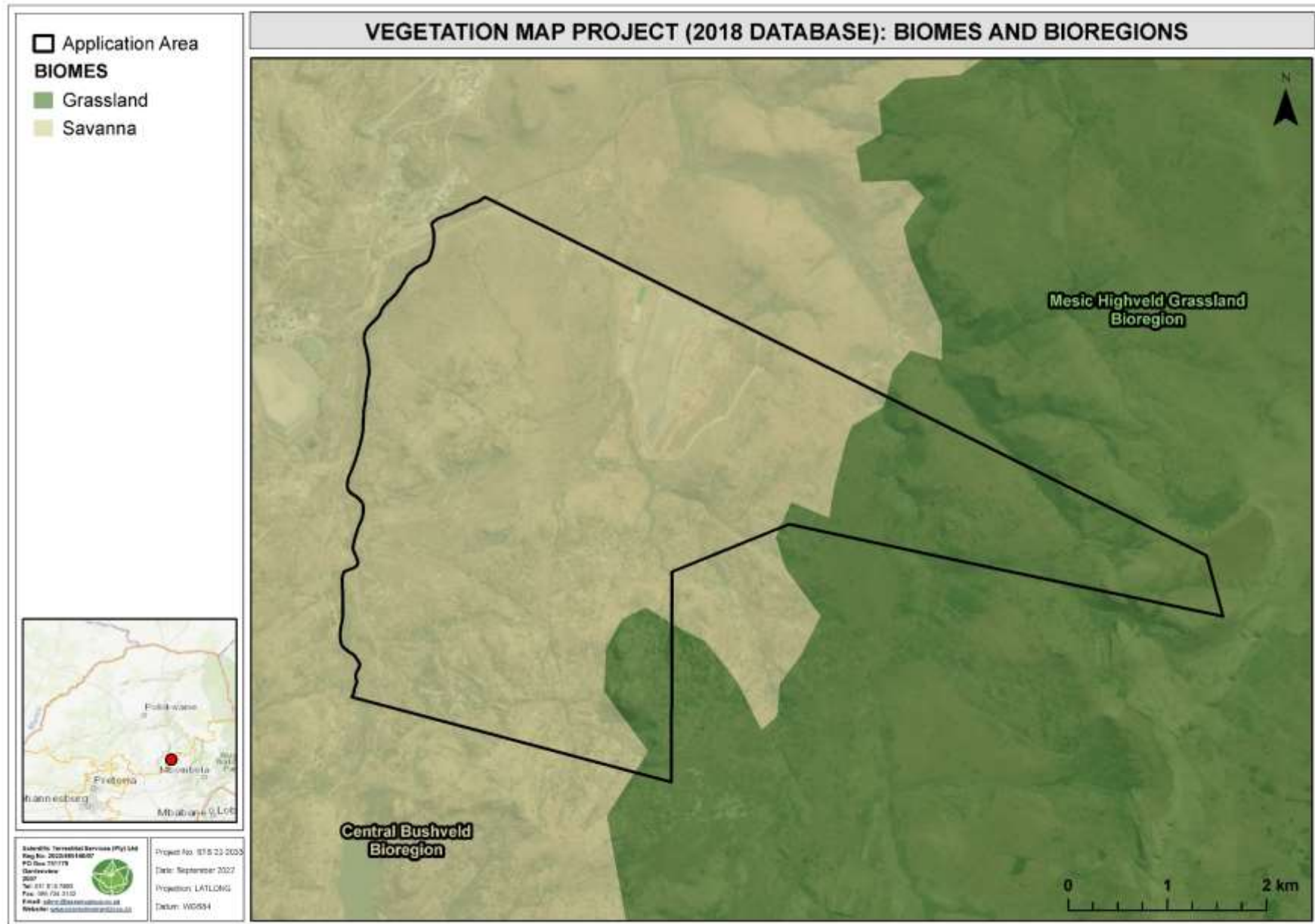


Figure 3: Biomes and Bioregions associated with the application area (SANBI, 2018a).



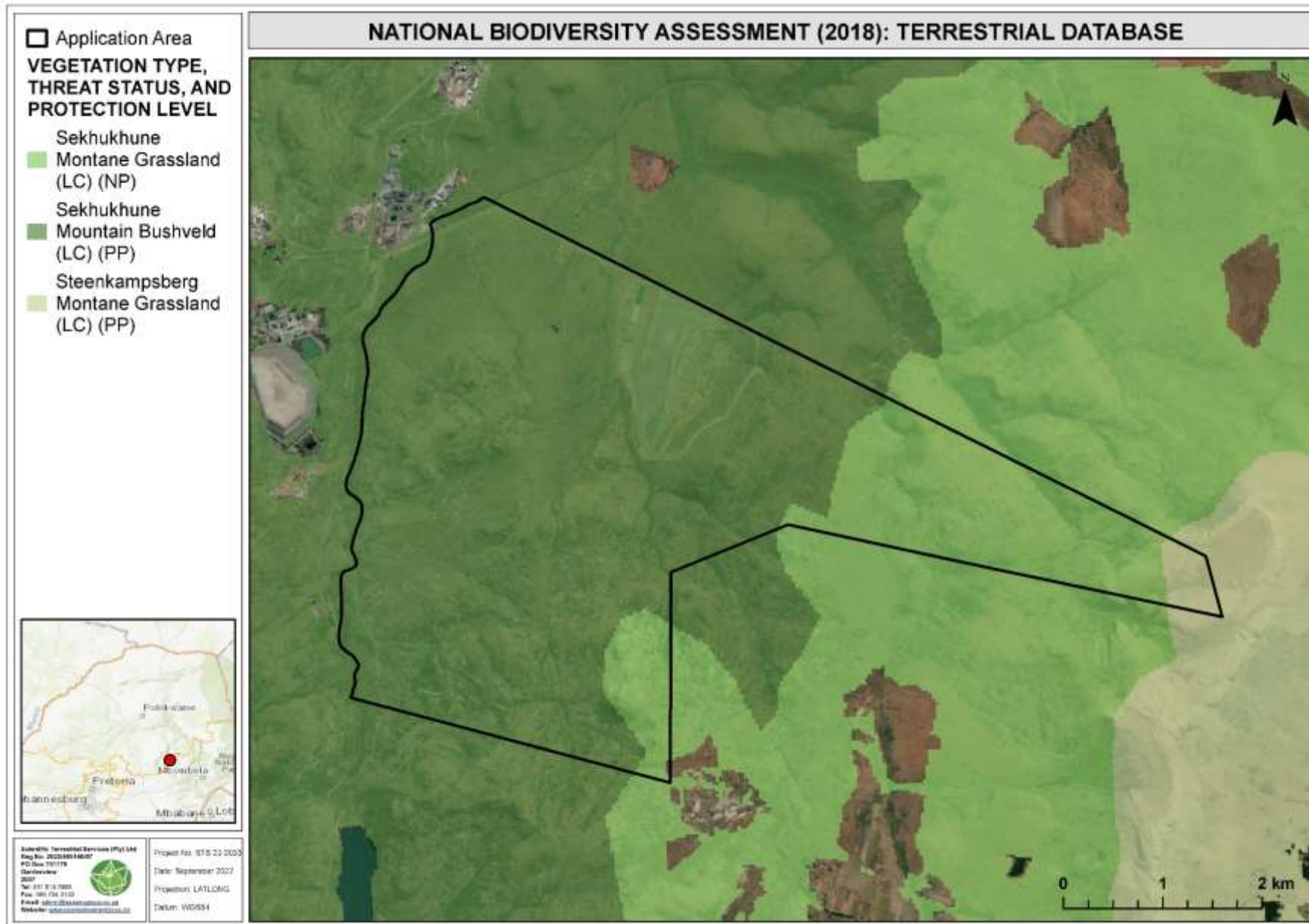


Figure 4: Remaining extent of the vegetation types, including threat status and protection level (SANBI, 2018b-c).



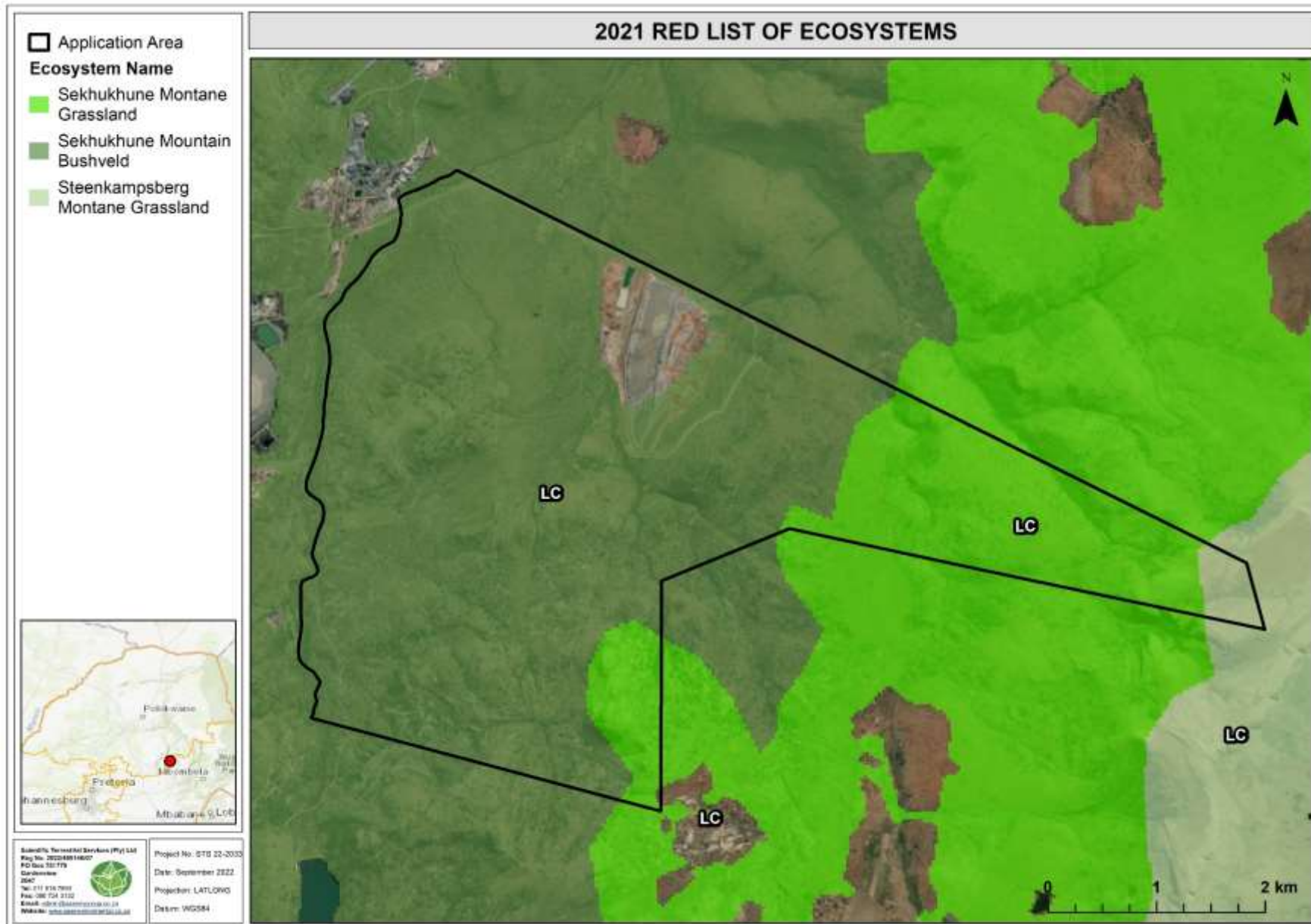


Figure 5: Remaining extent of the revised list of threatened terrestrial ecosystems (SANBI, 2021a-b).



Table 2: Database summaries of the biodiversity and conservation characteristics associated with the application area (QDS 2530AA).

LIMPOPO CONSERVATION PLAN (2018) – FIGURE 6			
The application area is associated with one CBA category according to the updated 2018 Limpopo Province Map of Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs).			
CBA 2	<p>The entire application area (apart from a very small section in the north-western corner) occurs in a CBA 2, which are areas considered “optimal” best design selected sites, areas selected to meet biodiversity pattern and/or ecological process targets. Alternative sites may be available to meet targets.</p> <p>Land Management Recommendations: Avoid conversion of agricultural land to more intensive land uses, which may have a negative impact on threatened species or ecological processes. Incompatible Land-Use: Urban land-uses including Residential (golf estates, rural residential, resorts), Business, mining & Industrial, Infrastructure (roads, power lines, pipelines). More intensive agricultural production than currently undertaken on site. Note: Certain elements of these activities could be allowed subject to detailed impact assessment to ensure that developments were designed to CBA 2. Alternative areas may need to be identified to ensure the CBA network still meets the required targets.</p>		
CONSERVATION DETAILS PERTAINING TO THE APPLICATION AREA (VARIOUS DATABASES)			
NATIONAL THREATENED ECOSYSTEMS (2011) (FIGURE 7)	<p>The application area is within the remaining extent of the EN Sekhukhune Mountainlands Ecosystem. This ecosystem is listed in GN 1002¹¹ under Criterion F: Priority areas for meeting explicit biodiversity targets as defined by a systematic biodiversity plan.</p> <p>Key biodiversity features include:</p> <ul style="list-style-type: none"> - <u>Two mammal species</u>: Juliana's Golden Mole and Gunning's Golden Mole; - <u>Eight bird species</u> including Blue Crane, Blue Korhaan and Cape Vulture, Grey Crowned Crane, Rudd's Lark, Southern Ground Hornbill, Wattled Crane, Yellowbreasted Pipit; - <u>Nineteen plant species</u> for example <i>Aloe furei</i>, <i>Gladiolus rufomarginatus</i>, <i>Lydenburgia cassinioides</i>, <i>Resnova megaphylla</i> (= <i>Ledebouria megaphylla</i>), <i>Scilla natalensis</i> (= <i>Merwillia plumbea</i>), and VU Sensitive species; and 	IBA (2015)	The application area does not occur in an IBA, nor are there any IBAs within 10 km thereof.
		SAPAD AND SACAD (2022); NPAES (2018)	<p>According to the SAPAD (2022)¹² and SACAD (2022)¹³, no formal or informal protected areas or conservation areas occur within 10 km of the application area.</p> <p>Most of the application area is, however, in the Sekhukhune Centre of Plant Endemism (SCPE), with the far eastern corner in the Lydenburg Centre of Plant Endemism (LCPE) (van Wyk <i>et al.</i>, 2002) (Figure 8).</p> <p>The NPAES (2018) indicates that the application area is in Priority Focus Areas (Figures 9). For Limpopo, the Priority Focus Areas include various biodiversity features to target potential protected area expansion.</p>

¹¹ Government Notice (GN) 1002 National Environmental Management: Biodiversity Act (10/2004): National list of ecosystems that are threatened and in need of protection. Gazette 34809, 9 December 2011.

¹² **SAPAD (2022):** The definition of protected areas follows the definition of a protected area as defined in the National Environmental Management: Protected Areas Act, (Act 57 of 2003). Chapter 2 of the National Environmental Management: Protected Areas Act, 2003 sets out the “System of Protected Areas”, which consists of the following kinds of protected areas - 1. Special nature reserves; 2. National parks; 3. Nature reserves; 4. Protected environments (1-4 declared in terms of the National Environmental Management: Protected Areas Act, 2003); 5. World heritage sites declared in terms of the World Heritage Convention Act; 6. Marine protected areas declared in terms of the Marine Living Resources Act; 7. Specially protected forest areas, forest nature reserves, and forest wilderness areas declared in terms of the National Forests Act, 1998 (Act No. 84 of 1998); and 8. Mountain catchment areas declared in terms of the Mountain Catchment Areas Act, 1970 (Act No. 63 of 1970).

¹³ **SACAD (2022):** The types of conservation areas that are currently included in the database are the following: 1. Biosphere reserves, 2. Ramsar sites, 3. Stewardship agreements (other than nature reserves and protected environments), 4. Botanical gardens, 5. Transfrontier conservation areas, 6. Transfrontier parks, 7. Military conservation areas and 8. Conservancies.



	<p>- <u>Five vegetation types</u> including Sekhukhune Montane Grassland, Sekhukhune Mountain Bushveld, Steenkampsberg Montane Grassland, Lydenburg Thornveld and Ohrigstad Mountain Bushveld.</p> <p>The ecosystem forms part of the Sekhukhuneland Centre of Endemism; it includes important sub-catchments, pans and wetlands and is important for grassland processes.</p> <p>Note: <i>The National List of Threatened Terrestrial Ecosystems published in terms of the NEMBA in 2011 remains in legal force. The data contained in NBA 2018 represents an update of the assessment of threat status for terrestrial ecosystems, but the National List of Threatened Terrestrial Ecosystems has not yet been revised.</i></p>	<p>STRATEGIC WATER SOURCE AREAS FOR SURFACE WATER (2017)</p>	<p>No Strategic Water Source Areas (SWSA) are associated with the application area, nor were any identified within 10 km thereof.</p> <p>Surface water SWSAs are defined as areas of land that supply a disproportionate (i.e., relatively large) quantity of mean annual surface water runoff in relation to their size. They include transboundary areas that extend into Lesotho and Swaziland. The sub-national Water Source Areas (WSAs) are not nationally strategic as defined in the report but were included to provide a complete coverage.</p>
<p>MINING AND BIODIVERSITY GUIDELINES (2012)</p>			
<p>HIGHEST BIODIVERSITY IMPORTANCE</p>	<p>The entire application area is in an area of Highest Biodiversity Importance. These areas are regarded to pose the Highest risk for mining.</p> <p>Implications for mining: Environmental screening, EIAs and their associated specialist studies should focus on confirming the presence and significance of these biodiversity features, and to provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision making for mining, water use licences, and environmental authorisations. If they are confirmed, the likelihood of a fatal flaw for new mining projects is very high because of the significance of the biodiversity features.</p>		
<p>NATIONAL FRESHWATER ECOSYSTEM PRIORITY AREAS (NFEPA) – 2011 DATABASE</p>			
<p>WETLAND VEGETATION TYPE FIGURE 10</p>	<p>The application area occurs in three wetland vegetation types, namely the CR Central Bushveld Group 1 (most of the central and western sections), the LC Mesic Highveld Grassland Group 6 (far eastern extent), and the EN Mesic Highveld Grassland Group 7 (within the eastern extent).</p> <p>The National Freshwater Ecosystem Priority Areas (NFEPA) project provides strategic spatial priorities for conserving South Africa’s freshwater ecosystems and supports sustainable use of water resources. Wetland vegetation groups are based on groupings of national vegetation types expected to share similar types of wetlands. They were used in combination with the landform map to identify wetland ecosystem types.</p>		

CBA = Critical Biodiversity Areas; ESA = Ecological Support Area; IBA = Important Bird Area; MAP – Mean annual precipitation; MAT – Mean annual temperature; MAPE – Mean annual potential evaporation; MFD = Mean Frost Days; MASMS – Mean annual soil moisture stress (% of days when evaporative demand was more than double the soil moisture supply); NBA = National Biodiversity Assessment; SAPAD = South African Protected Areas Database; SACAD – South Africa Conservation Areas Database, NPAES = National Protected Areas Expansion Areas Strategy. Ae = freely drained soils of red (yellow soils <10%); eutrophic > dystrophic/mesotrophic; Fb = Mainly Glenrosa and/or Mispah forms, shallow, and/or rocky, often steep, moderately leached (some lime, mainly in valleys); lb = Much rock (60-80%), usually with shallow and/or rocky soils on steep slopes.



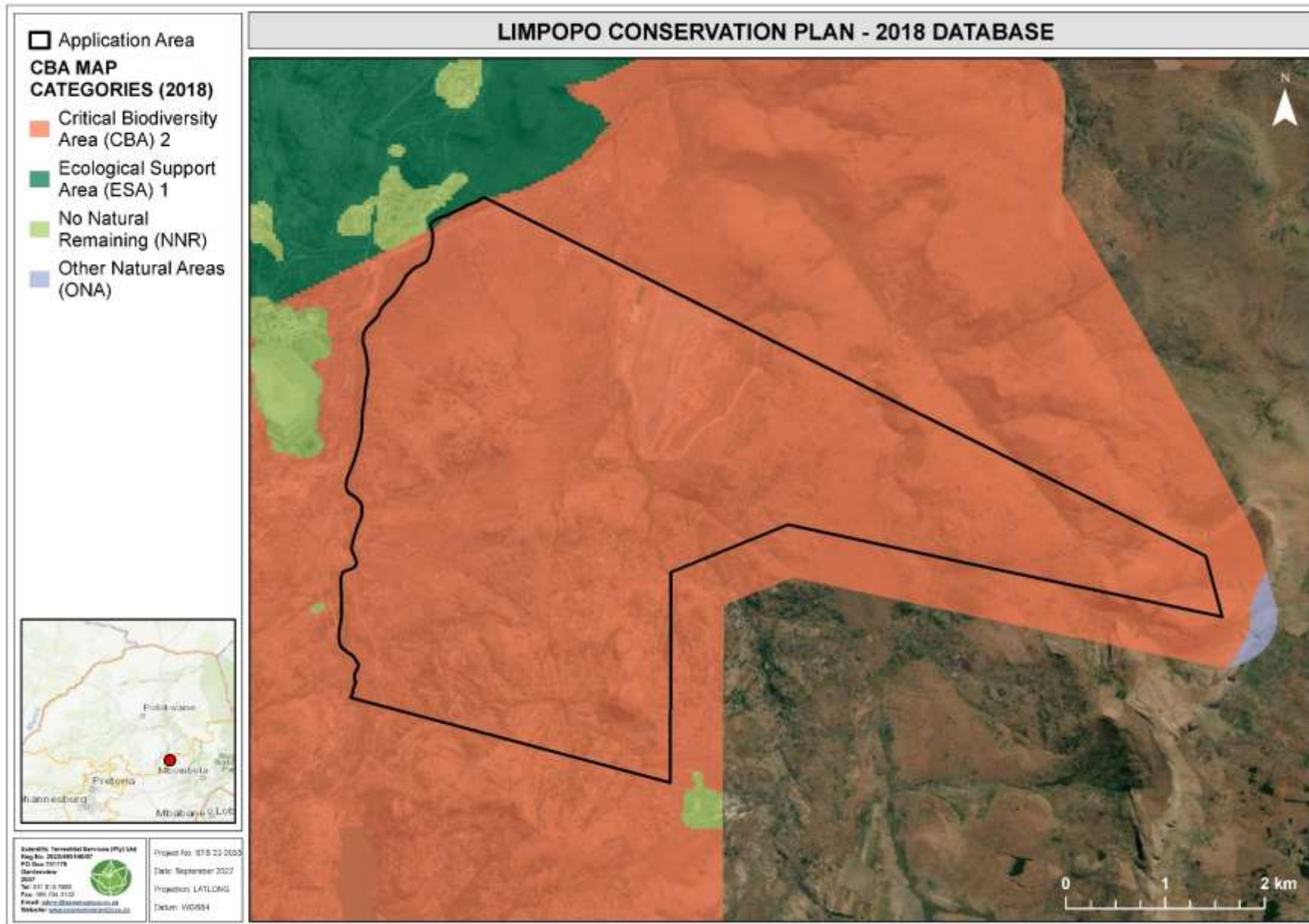


Figure 6: The application area in relation to the Limpopo Conservation Plan (2018).



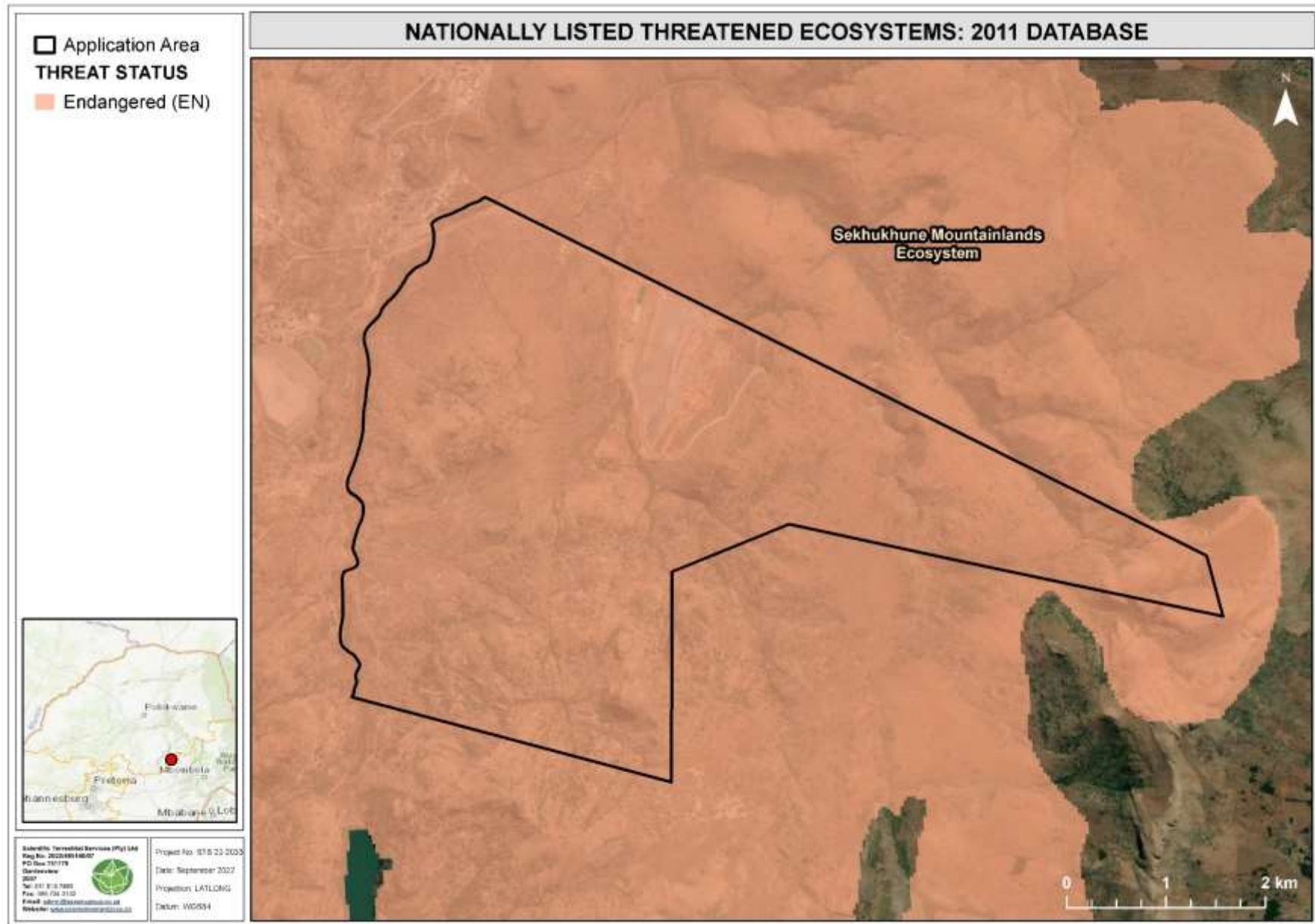


Figure 7: Endangered ecosystem associated with the application area (National Threatened Ecosystems database of 2011).



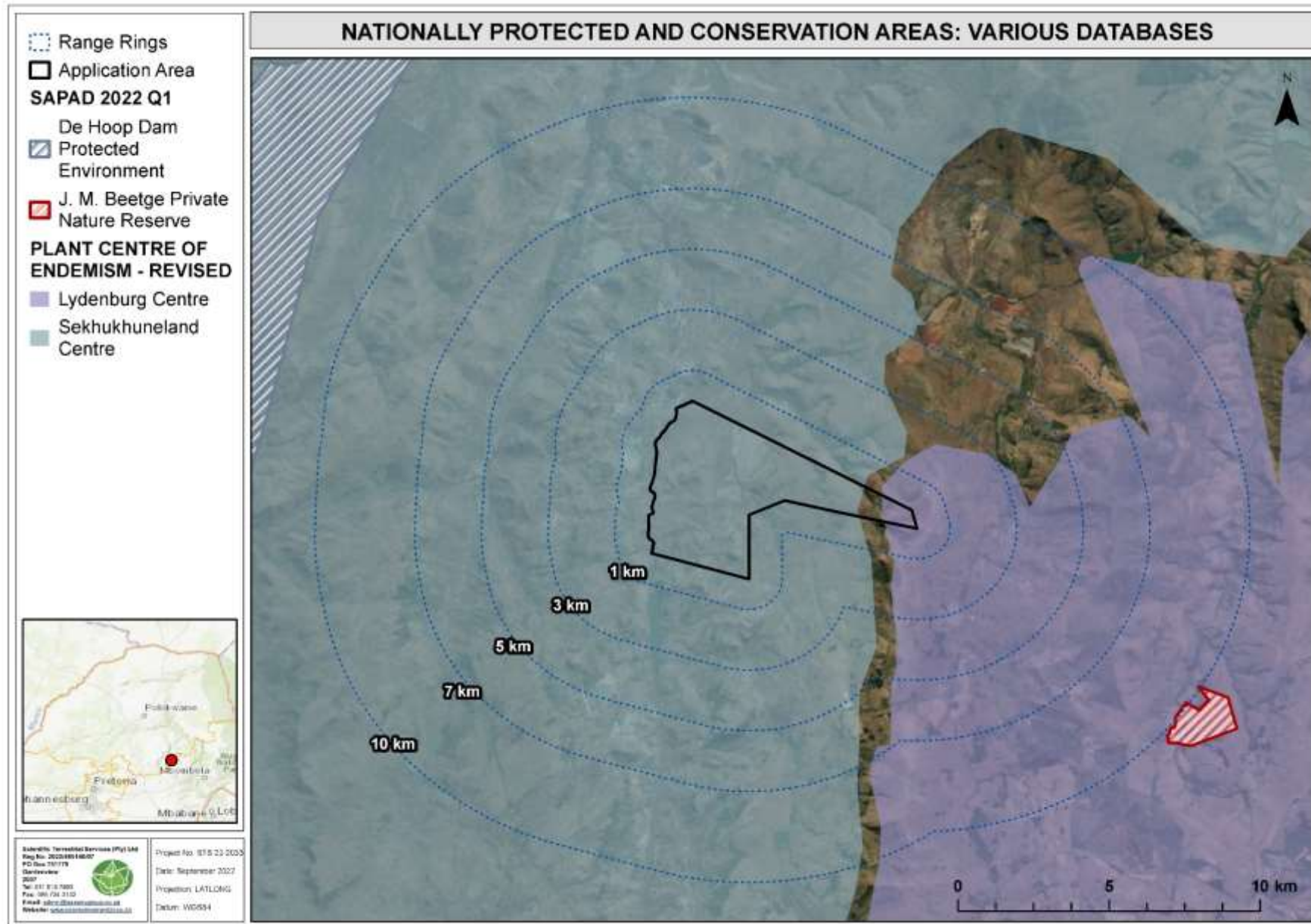


Figure 8: The application area in relation to protected areas (as per SAPAD, 2022 Q1) and Centers of Plant (or phyto) Endemism (CPE).



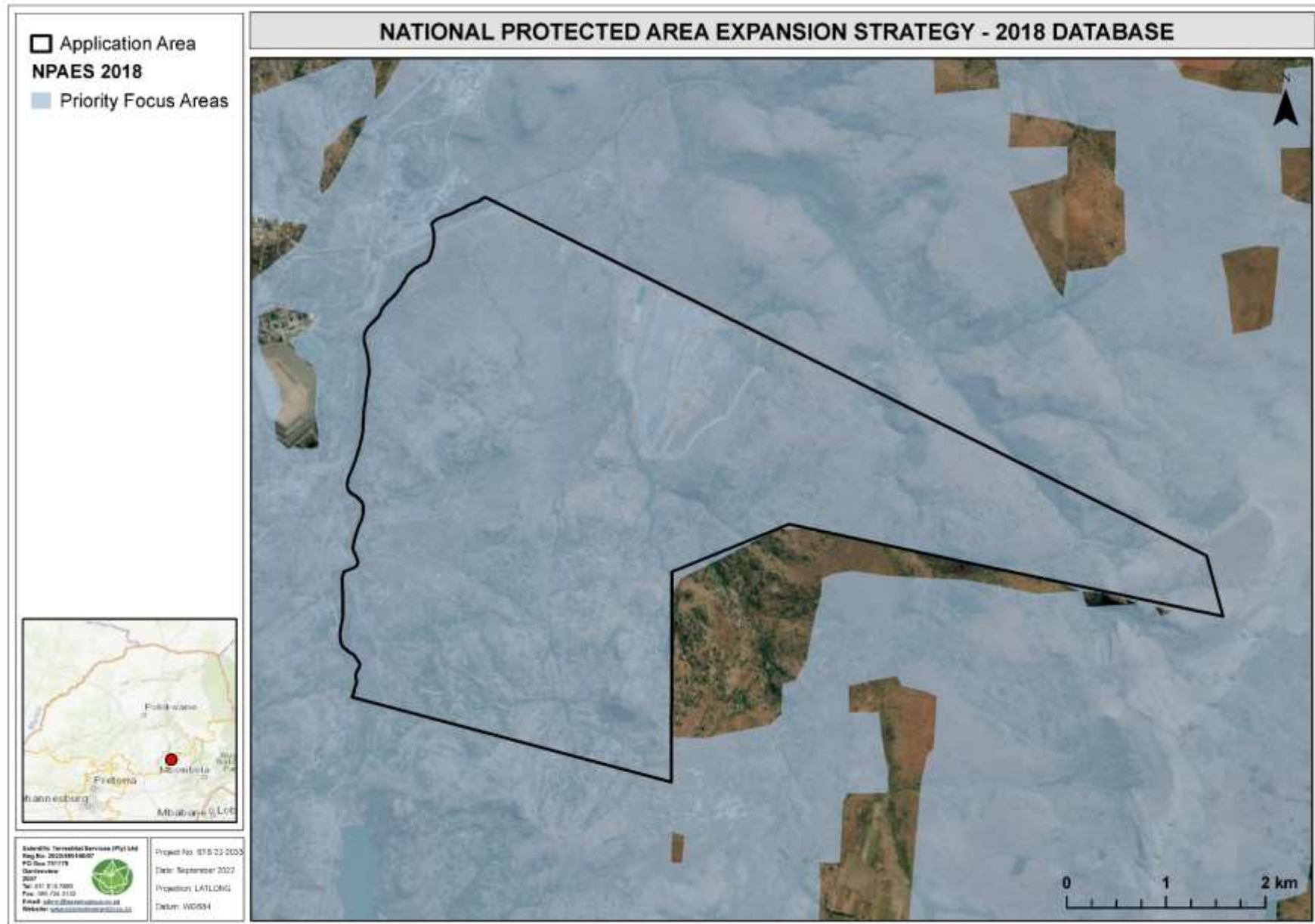


Figure 9: Priority Focus Areas in relation to the application area (NPAES, 2018).



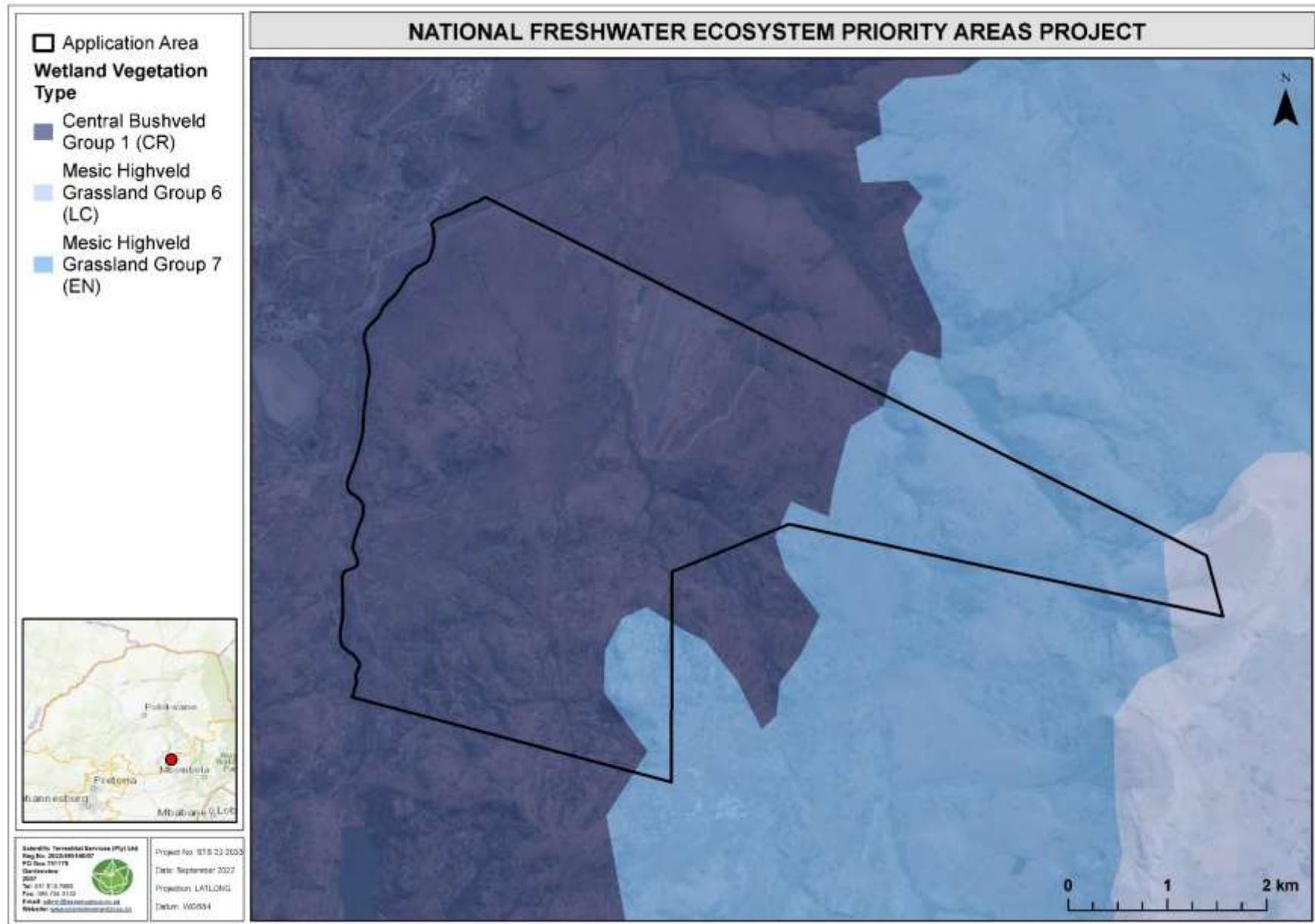


Figure 10: The application area in relation to the various wetland vegetation types (as per the NFEPA 2011 database).



3.2 Outcomes of the Screening Tool

The below table and figures present the Screening Tool outcomes for the application area in terms of the animal species theme, the plant species theme, and the terrestrial combined biodiversity theme. The verified results are presented in Sections 4 and 5 of this report.

Table 3: Screening Tool outcome for the application area.

NATIONAL WEB-BASED ENVIRONMENTAL SCREENING TOOL	
<p>The Screening Tool is intended to allow for pre-screening of sensitivities in the landscape to be assessed within the Environmental Authorisation (EA) process. This assists with implementing the mitigation hierarchy by allowing developers to adjust their proposed development footprint to avoid sensitive areas. The different sensitivity ratings pertaining to the Plant [and Animal] Protocols are described below:</p> <ul style="list-style-type: none"> ➤ Very High: Habitat for species that are endemic to South Africa, where all the known occurrences of that species are within an area of 10 km² are considered Critical Habitat, as all remaining habitat is irreplaceable. Typically, these include species that qualify under CR, EN, or VU¹⁴ D criteria of the IUCN or species listed as Critically/ Extremely Rare under South Africa’s National Red List Criteria. For each species reliant on a Critical Habitat, all remaining suitable habitat has been manually mapped at a fine scale. ➤ High: Recent occurrence records for all threatened (CR, EN, VU) and/or rare endemic species are included in the high sensitivity level. ➤ Medium: Model-derived suitable habitat areas for threatened and/or rare species are included in the medium sensitivity level. ➤ Low: Areas where no species of conservation concern (SCC) are known or expected to occur. <p>**As per the best practise guidelines as stipulated by the South African National Biodiversity Institute (SANBI, i.e., the regulatory body for biodiversity within South Africa) protocol, the name of these sensitive species must remain confidential and should not be shared outside of the current report, especially into public domain.</p>	
<p>ANIMAL SPECIES THEME FIGURE (FIGURE 11)</p>	<p>For the animal species theme, the application area is considered to largely be in an area of medium sensitivity, with a scattered sections considered to be of high sensitivity. The triggered species are provided below.</p> <p>High Sensitivity triggering species:</p> <ul style="list-style-type: none"> - <u>Class Avifauna:</u> <i>Falco biarmicus</i> (Lanner Falcon; VU), and <i>Polemaetus bellicosus</i> (Martial Eagle; EN). - <u>Class Mammalia:</u> <i>Rhinolophus cohenae</i> (Cohen’s Horseshoe Bat; VU). <p>Medium Sensitivity triggering species:</p> <ul style="list-style-type: none"> - <u>Class Avifauna:</u> <i>Podica senegalensis</i> (African Finfoot; VU), <i>Stephanoaetus coronatus</i> (Crowned Eagle; VU), <i>Hydroprogne caspia</i> (Caspian Tern; VU), <i>Neotis denhami</i> (Denham’s Bustard; VU), <i>Geronticus calvus</i> (Southern Bald Ibis; VU), <i>Aquila rapax</i> (Tawny Eagle; EN), <i>Aquila verreauxii</i> (Verreaux’s Eagle; VU), <i>Eupodotis senegalensis</i> (White-bellied Korhaan; VU). - <u>Class Mammalia:</u> <i>Amblysomus robustus</i> (Robust Golden Mole; VU), <i>Chrysospalax villosus</i> (Rough-haired Golden Mole; VU), <i>Crocidura maquassiensis</i> (Makwassie musk Shrew; VU), <i>Dasymys robertsii</i> (African Marsh Rat; VU), <i>Hydrictis maculicollis</i> (Spotted-necked Otter; VU), <i>Lycaon pictus</i> (African Wild Dog; EN), <i>Ourebia ourebi ourebi</i> (Oribi; EN). - <u>Class Reptilia:</u> <i>Kinixys lobatsiana</i> (Lobatse Hinge-Back Tortoise; VU).

¹⁴ In the Vulnerable category, the D criteria encompass species with less than 1 000 individuals, or area of occurrence of less than 20 km².



<p>PLANT SPECIES THEME (FIGURE 12)</p>	<p>For the plant species theme, the entire application area is considered to have a medium sensitivity.</p> <p>The medium sensitivity was triggered by potential suitable habitat for Sensitive species 1252 (VU), Sensitive species 587 (Rare), Sensitive species 124 (CR), <i>Cymbopappus piliferus</i> (VU), <i>Polygala sekhukhuniensis</i> (VU), Sensitive species 1167 (VU), <i>Streptocarpus latens</i> (Rare), <i>Searsia sekhukhuniensis</i> (Rare), <i>Khadia alticola</i> (Rare), <i>Combretum petrophilum</i> (Rare), Sensitive species 691 (VU), Sensitive species 998 (EN), Sensitive species 1086 (EN), and <i>Hesperantha bulbifera</i> (Rare).</p>
<p>TERRESTRIAL BIODIVERSITY THEME (FIGURE 13)</p>	<p>For the terrestrial biodiversity theme, the entire application area is considered to have an overall sensitivity of very high. The trigger biodiversity themes are:</p> <ul style="list-style-type: none"> - Critical Biodiversity Area 2 (refer to results of the 2018 Limpopo C-Plan); - FEPA Sub-catchments; - Endangered ecosystem (Corresponding with the National Threatened Ecosystems Database; 2011), and - Protected Areas Expansion Strategy.



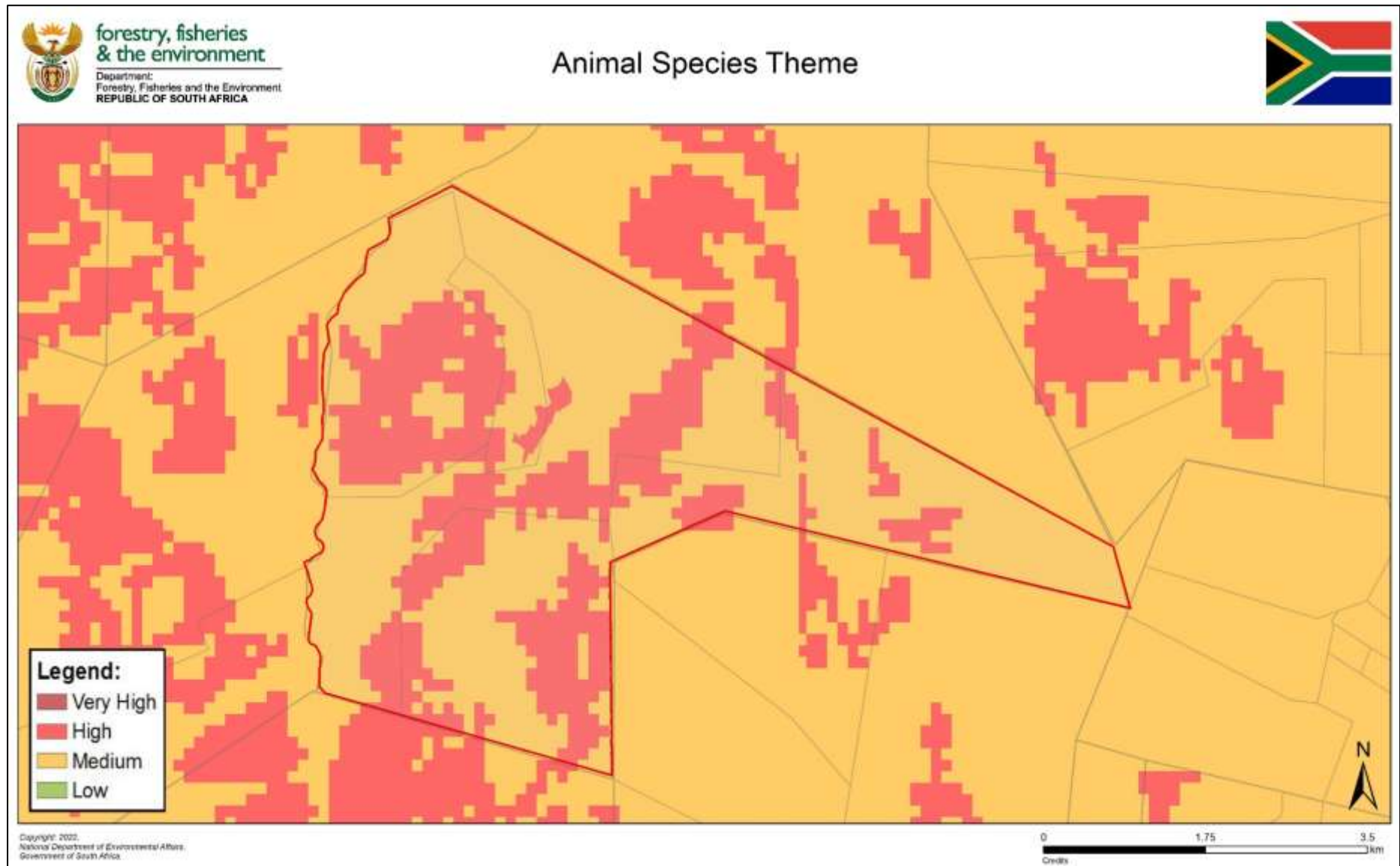


Figure 11: Screening Tool outcome for the animal species theme.



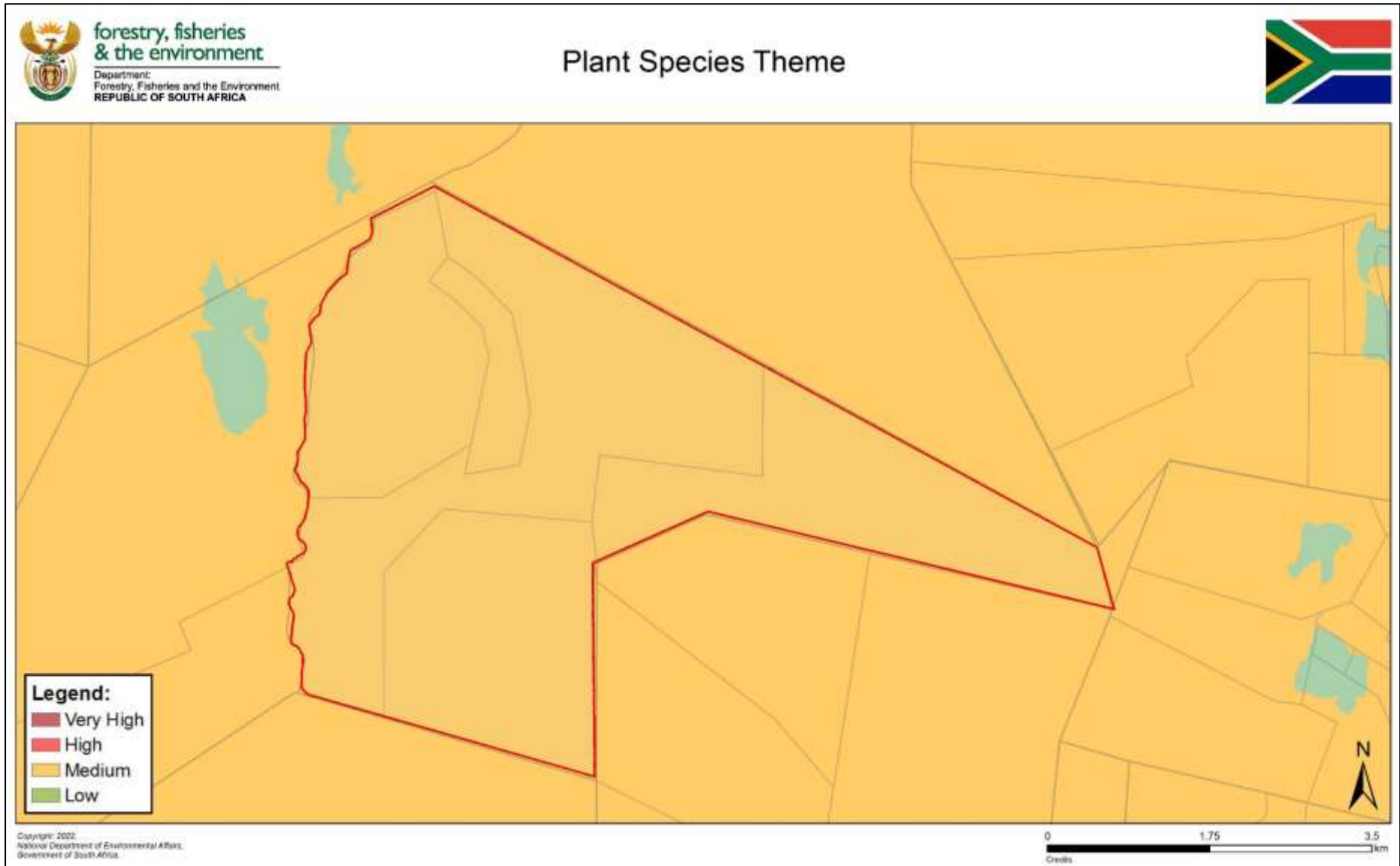


Figure 12: Screening Tool outcome for the plant species theme.



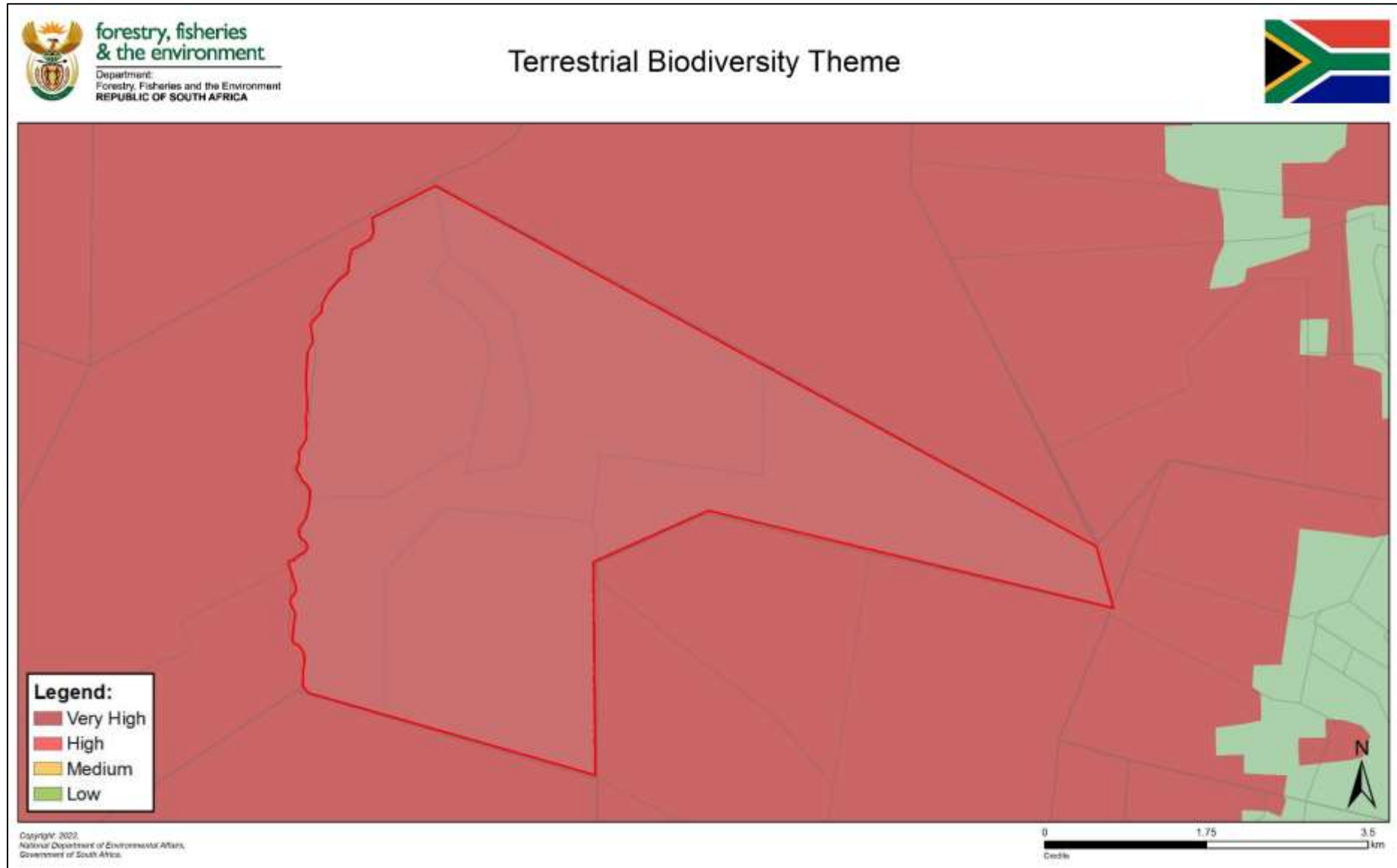


Figure 13: Screening Tool outcome for the terrestrial combined biodiversity theme.

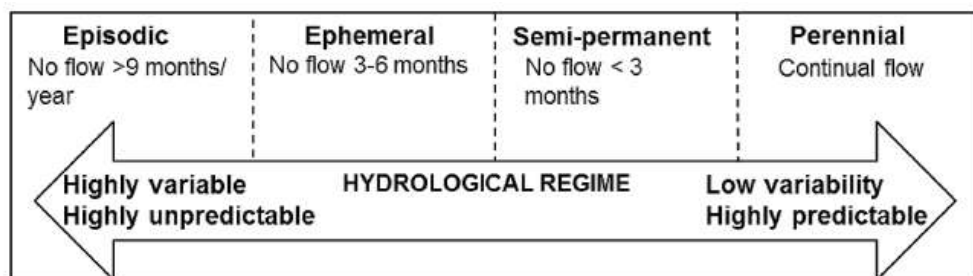


4 FIELD ASSESSMENT RESULTS

The application area is largely associated with natural landscapes characterised by both bushveld and grassland communities interspersed with various freshwater features. Anthropogenic-related land uses associated with the application area and surrounds include mining and agriculture, albeit small and localised in extent. The vegetation communities associated with the application area have therefore retained most of its habitat integrity, and ecological processes are minimally altered/impeded within the non-transformed sections. Areas closer to the anthropogenic land uses have inevitably experienced edge effects from e.g., overgrazing, fragmentation, and/or alien and invasive plant (AIP) proliferation. These edge effects have resulted in altered vegetation communities and a shift away from the reference vegetation types in these areas.

The below broad habitat units could be distinguished within the application area:

- **Degraded Habitat:**
 - Secondary Bushveld (historically cultivated and areas experiencing significant edge effects) and Transformed Habitat (mining-related).
- **Freshwater Habitat¹⁵.** The below grouping is based on similarities in vegetation structure and species composition. For a breakdown of the Freshwater Habitat into Hydrogeomorphic (HGM) units, please refer to the Freshwater Ecological Verification Report:
 - An Artificial Feature, Ephemeral and Episodic Drainage Lines (EEDLs), Rivers and Streams (including two Perennial Streams and the Groot-Dwars River), and Wetlands (comprising a Channelled Valley Bottom and several smaller Seep Wetlands).



¹⁵ The Freshwater Habitat encompasses true watercourses. In terms of the definition contained within the National Water Act, 1998 (Act No. 36 of 1998), a watercourse means:

- A river or spring;
 - A natural channel which water flows regularly or intermittently;
 - A wetland, dam or lake into which, or from which, water flows; and
 - Any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse;
- and a reference to a watercourse includes, where relevant, its bed and banks.



- **Montane Grassland:**
 - Sekhukhune Montane Grassland and Steenkampsberg Montane Grassland.
- **Sekhukhune Mountain Bushveld:**
 - Open Bushveld, Mountain Bushveld, and Wooded Cliffs.

The above habitat units are presented in Figure 14 below. Refer to Section 4.1 for a breakdown of the floral field-verified results and Section 4.2 for the faunal field-verified results.



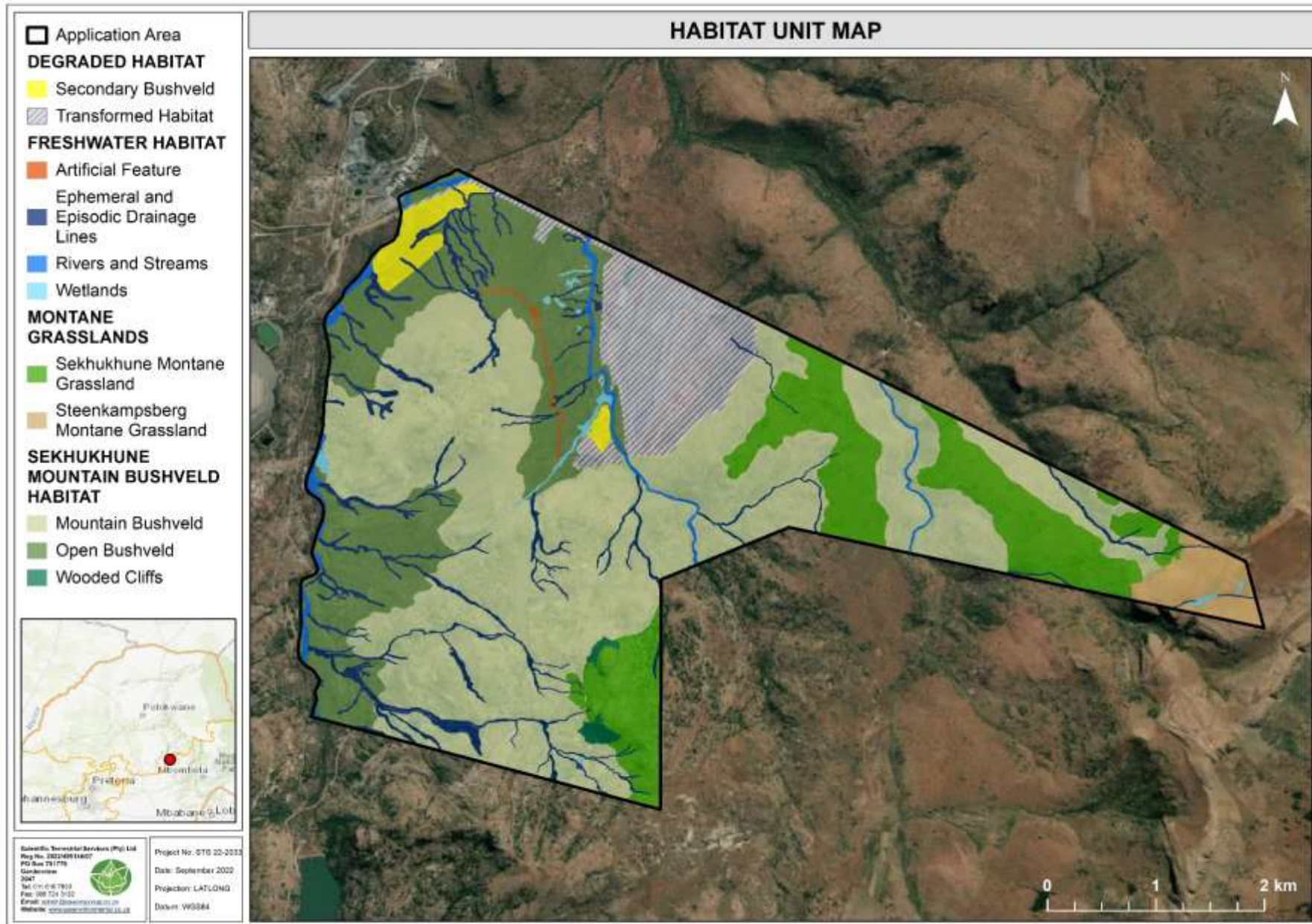




Figure 14: Habitat units associated with the application area.



4.1 Floral Field-Verified Results

Four broad habitat units have been distinguished for the application area. The floral ecology of these habitat units is briefly discussed below, with the outcome of the Screening Tool (i.e., the plant species theme and terrestrial biodiversity theme) verified or disputed at the end of each section.

Table 4: Degraded Habitat (Secondary Bushveld and Transformed Habitat sub-units).

HABITAT OVERVIEW	
<p>The <u>Transformed Habitat</u> includes areas where significant current modification to the vegetation communities exists (e.g., vegetation cleared for mining operations and road development), whereas the <u>Secondary Bushveld</u> includes areas that are currently vegetated but have received either significant modification in the past (e.g., historically cultivated fields) or are currently subjected to edge effects that have resulted in degraded vegetation communities. See representative photos below:</p>	
	
<p>Mining operations depicted in the left photo, with historically cultivated fields dominated by <i>Heteropogon contortus</i> depicted in the right photo.</p>	
<p>The Transformed Habitat is associated with a low species richness and typically included a close association with AIP species that are able to colonise in such disturbed habitat. As such, the Transformed Habitat does not retain any semblance to the reference vegetation type (i.e., the Sekhukhune Mountain Bushveld). The Secondary Bushveld was associated with moderately low species richness and were homogenous in their floral compliment, dominated by grasses that indicate poor veld conditions (namely <i>Cymbopogon</i> spp., <i>Heteropogon contortus</i> and <i>Hyparrhenia</i> spp.) – as such, no remnants of the reference state remain.</p>	



BIODIVERSITY PRIORITY AREAS ¹⁶			
CBA 2	EN Sekhukhune Ecosystem	Mountainlands	Highest Biodiversity Importance Area (Mining and Biodiversity Guidelines)
Not applicable. Extent of modification prevents the CBA to function in a way that will allow regional biodiversity targets to be met.	Not applicable. None of the key biodiversity features of the EN ecosystem are present in these sub-units.	NPAES Priority Focus Area	Not applicable. No biodiversity of significance is present in these sub-units.
<p style="text-align: center;">PLANT SPECIES OUTCOME¹⁷</p> <p>Due to the extent to which natural floral community structure and composition have been altered by anthropogenic activities, floral SCC are less likely to establish viable populations (if any), especially within areas that have been completely transformed. No red data listed (RDL) species identified by the Screening Tool, the Threatened or Protected Species (TOPS) list (2007 Regulations), or Section 56 of the National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004) (NEMBA), are associated with these habitat sub-units.</p> <p>Species protected under the National Forest Act, 1998 (Act No. 84 of 1998) (NFA) and the Limpopo Environmental Management Act, 2003 (Act No. 7 of 2003) (LEMA) may be present but will not be abundant, as favourable habitat is more abundant in the neighbouring less disturbed habitat units. The medium sensitivity for the plant species theme generated by the Screening Tool is not supported for this habitat unit and its sub-units; instead, a low sensitivity is recommended.</p>			
SCREENING TOOL VERIFICATION			
Plant Species Theme		Terrestrial Biodiversity Theme	
Screening Tool Sensitivity	Verified Sensitivity	Screening Tool Sensitivity	Verified Sensitivity
Medium	Low	High	Low





¹⁶ **BIODIVERSITY PRIORITY AREAS:** Protected Areas, Critically Endangered and Endangered ecosystems, Critical Biodiversity Areas and Ecological Support Areas, Freshwater Ecosystem Priority Areas, high water yield areas, flagship free-flowing rivers, priority estuaries, Priority Areas for land-based protected area expansion.

¹⁷ **PLANT SPECIES OUTCOME:** As part of the SCC assessment, the following classes were considered:

- **Threatened species.** In terms of Section 56(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA), threatened species are Red Data Listed (RDL) species falling into the following categories of ecological status: Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Protected in terms of the NEMBA Threatened or Protected Species (TOPS) Regulations (General Notice (GN) R152 of 2007, as amended). Removal, translocation and/or destruction of these species require authorisation from the DFFE.
- **Protected Species.** Species that do not necessarily fall in the above categories of ecological status, but that are deemed important from a provincial biodiversity perspective, e.g., LEMA provides a list of Specially Protected Plants (Schedule 11) and Protected Plants (Schedule 12) for the Limpopo Province for which restricted activities may not occur without permits from the relevant provincial authorities. The List of Protected Tree Species (GN No. 536) as published in the Government Gazette 41887 dated 7 September 2018 as it relates to the NFA was also considered for the SCC assessment.



Table 5: Freshwater Habitat.

HABITAT OVERVIEW			
<p>The EEDLs are scattered throughout the application area, often typified by deeply incised channels. Within the application area, the EEDLs account for the largest portion of the Freshwater Habitat unit, and are associated with periodic, or temporary, surface water, i.e., flowing water occurs only during, and for a short duration after, precipitation events in a typical year. The vegetation of the EEDLs is characterised by a variable riparian¹⁸ zone; however, within the variable riparian zones, several broad vegetation communities can be distinguished for the EEDLs; each community varying in vegetation structure and species composition depending on the associated terrain. Overall, these systems are in a good ecological condition. Refer to below representative photos:</p>			
			
<p>The Wetlands include systems associated with seep wetlands and channelled valley bottom wetlands (please refer to the Freshwater Report for further details) where the vegetation is characterised by a well-represented herbaceous and graminoid layer, and generally lacking a woody component. The Wetlands are mostly located in the central section of the application area; however, isolated wetlands are also found in the western and eastern sections of the application area. Ecologically, the Wetlands are considered important systems that contribute to overall floral species diversity in the area – providing specialised and niche habitat for especially forbs and sedges that are not represented elsewhere in the application area. Wetlands within the Montane Grasslands (i.e., those in the eastern extent of the application area) are deemed of very high ecological importance due to the greater floral diversity supported therein and due to their seclusion from anthropogenic activities which has resulted in improved habitat integrity. Refer to below representative photos:</p>			

¹⁸ **National Water Act, 1998 (Act 36 of 1998) (NWA):** “Riparian Habitat” includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.





Photos a) – b) include grass- and sedge-rich wetlands associated with the bushveld communities (western and central sections of the application area). Photos c) – d) include wetlands associated with the higher altitude montane grassland communities (i.e., far eastern section).

The **Rivers and Streams** include systems associated with perennial streams¹⁹ and include the Groot-Dwars River, Mareesburg Stream (a tributary of the Groot-Dwars River), and higher altitude, mountain streams. These systems, being associated with a more permanent surface water than the EEDLs, have different vegetation communities, including a higher abundance and diversity of graminoid species. This habitat sub-unit is located throughout the application area, with the Groot-Dwars River running along the western extent of the application area, the Mareesburg Stream running through the central section of the application area, and the mountain streams located in the eastern portion of the application area. These systems are in a fair to excellent ecological condition and support important ecological processes in the area.

Refer to below representative photos:



River and Stream communities. Photo a): Habitat associated with the Groot Dwars River. Photo b): Habitat associated with the Mareesburg stream. Photos c) - d): Higher-altitude Mountain streams.

¹⁹ A **perennial stream or perennial river** is a stream or river (channel) which has a flow of water throughout the year through at least parts of its stream bed during years of normal rainfall. [Meinzer, O.E., 1923. Outline of ground-water hydrology, with definitions: US Geol. Survey Water-Supply Paper, 494(71), p.1923b.].




BIODIVERSITY PRIORITY AREAS					
CBA 2	EN Sekhukhune Ecosystem	Mountainlands	NPAES Priority Focus Area	Highest Biodiversity Importance Area (Mining and Biodiversity Guidelines)	
Confirmed functioning.	Confirmed. Key biodiversity features present (i.e., especially in terms of plant species within the EEDLs).		Confirmed. Adequate habitat connectivity is present, as well as suitable biodiversity features that would necessitate protection/conservation, and hence considered a good candidate for protected area expansion.	Confirmed. Several priority biodiversity features are associated with this habitat unit.	
PLANT SPECIES OUTCOME					
SPECIES NAME	Probability of Occurrence (POC)	STATUS	SPECIES NAME	POC	STATUS
<i>Alepidea attenuata</i>	Medium	NT	<i>Mystacidium cf. capense</i>	Confirmed	LC. LEMA
<i>Balanites Maughamii</i>	High	LC. NFA	<i>Polygala sekhukhuniensis</i>	Low	VU
<i>Berchemia zeyheri</i>	Confirmed	LC. NFA	<i>Scadoxys puniceus</i>	Confirmed	LC. LEMA
<i>Catha edulis</i>	High	LC. NFA	<i>Searsia sekhukhuniensis</i>	Low	Rare
<i>Combretum petrophilum</i>	Low	Rare	<i>Streptocarpus latens</i>	Low	Rare
<i>Cymbopappus piliferus</i>	Medium	VU	Sensitive species 124	Low	CR
<i>Disa alticola</i>	Medium	VU	Sensitive species 587	Confirmed	Rare
<i>Hesperantha bulbifera</i>	Medium (SMG ²⁰)	Rare	Sensitive species 691	Medium	VU
<i>Khadia alticola</i>	Low	Rare	Sensitive species 998	Medium	EN
<i>Liparis bowkeri</i>	Confirmed	LC. LEMA	Sensitive species 1086	Medium	EN
<i>Ledebouria megaphylla</i>	Confirmed	VU	Sensitive species 1167	Low	VU
<i>Lydenburgia cassinoides</i>	Confirmed	NT, NFA	Sensitive species 1252	Confirmed	VU
<i>Merwillia plumbea</i>	Confirmed	NT. LEMA			
SCREENING TOOL VERIFICATION					
Plant Species Theme			Terrestrial Biodiversity Theme		
Screening Tool Sensitivity	Verified Sensitivity		Screening Tool Sensitivity	Verified Sensitivity	
Medium	High recommended		High	High	

²⁰ Where the Freshwater Habitat occurs in the Sekhukhune Montane Grassland or SMG



Table 6: Montane Grasslands.

HABITAT OVERVIEW
<p>The unit is regarded representative of the reference states, namely the Sekhukhune Montane Grassland (southern and eastern sections of the application area) and the Steenkampsberg Montane Grassland (far eastern section of the application area). When compared to the Freshwater Habitat and the Sekhukhune Mountain Bushveld habitat within the application area, the distribution of the Montane Grasslands is more restricted in its extent; typically occurring at higher elevations (1 300 m – 1 800 m a.s.l.), as opposed to the bushveld communities that only extend to 1 600 m a.s.l. Very little impacts to the Montane Grasslands within the application area were evident and as such, primary grassland²¹ conditions predominate in this habitat units. The overall habitat integrity and ecological function is considered high, and no impediment to natural ecological processes were noted. Floral diversity was high for this habitat unit and the forb component was especially well-represented.</p> <p>The Steenkampsberg Montane Grassland not only occurs at a higher elevation than the Sekhukhune Montane Grassland but was also represented by unique geology. Floral communities supported in the Sekhukhune Montane Grassland and Steenkampsberg Montane Grassland seems to be very different; however, due to recent burning in the Steenkampsberg Montane Grassland at the time of assessment, vegetation communities are under surveyed in this sub-unit. The Sekhukhune Montane Grassland supports a higher diversity of forbs, whereas the Steenkampsberg Montane Grassland supports a higher diversity of succulents.</p> <p>Refer to below representative photos:</p> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> <p>Representative photos of the Sekhukhune Montane Grassland sub-unit. Forb species are well-represented. The first photo is a general habitat photo, followed by grassland forbs unique to the sub-unit, namely (from left to right): <i>Gladiolus longicollis</i>, <i>Hypoxis galpinii</i>, <i>Streptocarpus dunnii</i>, and one of the many bulbous plants.</p>

²¹ Some grasslands can be distinguished from each other based on the extent of modification they have undergone (SANBI, 2013):

- **Primary grasslands** are those that have not been significantly modified from their original state; even though they may no longer have their full complement of naturally occurring species, they have not undergone significant or irreversible modification and still retain their essential ecological characteristics.
- **Secondary grasslands** are those that have undergone extensive modification and a fundamental shift from their original state (e.g., to cultivated areas), but have then been allowed to return to a 'grassland' state (e.g., when old, cultivated lands are re-colonised by a few grass species). Although secondary grasslands may superficially look like primary grasslands, they differ markedly with respect to species composition, vegetation structure, ecological functioning and the ecosystem services they deliver.





Representative photos of the Steenkampsberg Montane Grassland sub-unit. Succulent species are well-represented. The first photo is a general habitat photo with *Cotyledon* in the foreground, followed by grassland succulents unique to the sub-unit, namely (from left to right): *Anacampseros subnuda*, *Huernia zebrina*, *Crassula setulosa*, and *Euphorbia clavarioides*.

BIODIVERSITY PRIORITY AREAS

CBA 2	EN Sekhukhune Ecosystem	Mountainlands	NPAES Priority Focus Area	Highest Biodiversity Importance Area (Mining and Biodiversity Guidelines)
Confirmed functional.	Confirmed. Several key biodiversity features of the EN ecosystem are associated present in this habitat unit (both vegetation types and plant species).		Confirmed. Adequate habitat connectivity is present, as well as suitable biodiversity features that would necessitate protection/conservation, and hence considered a good candidate for protected area expansion.	Confirmed. Several priority biodiversity features are associated with this habitat unit.

PLANT SPECIES OUTCOME

SPECIES NAME	POC	STATUS	SPECIES NAME	POC	STATUS
<i>Alepidea attenuata</i>	Medium	NT	<i>Polygala sekhukhuniensis</i>	Low	VU
<i>Aloe reitzii</i>	Medium	NT.	<i>Searsia sekhukhuniensis</i>	Low	Rare
<i>Combretum petrophilum</i>	Low	Rare	<i>Streptocarpus latens</i>	Low	Rare
<i>Cymbopappus piliferus</i>	High (SMG)	VU	Sensitive species 92	Confirmed	VU. LEMA. TOPS
<i>Disa alticola</i>	Medium	VU. LEMA	Sensitive species 124	Low	CR
<i>Hesperantha bulbifera</i>	Low	Rare	Sensitive species 587	Low	Rare
<i>Huernia zebrina</i> subsp. <i>insigniflora</i>	Confirmed	LC. LEMA	Sensitive species 691	Medium	VU
<i>Khadia alticola</i>	Low	Rare	Sensitive species 998	Medium	EN
<i>Merwillia plumbea</i>	Confirmed	NT. LEMA	Sensitive species 1086	Medium	EN
<i>Pearsonia hirsuta</i>	High	VU	Sensitive species 1167	Confirmed	VU
<i>Protea parvula</i>	Medium	NT	Sensitive species 1252	Low	VU

SCREENING TOOL VERIFICATION

Plant Species Theme		Terrestrial Biodiversity Theme	
Screening Tool Sensitivity	Verified Sensitivity	Screening Tool Sensitivity	Verified Sensitivity
Medium	High recommended	High	High



Table 7: Sekhukhune Mountain Bushveld.**HABITAT OVERVIEW**

There is great variability in the habitat associated with the bushveld communities. The habitat unit could, however, be divided into three sub-units based on their presence in the landscape and some key differences in vegetation communities. Vegetation communities associated with the sheetrock formations are scattered throughout the application area and is interspersed between both the Sekhukhune Mountain Bushveld habitat unit and the Montane Grassland habitat unit.

The **Open Bushveld** sub-unit occurs along the footslopes of the mountains in the western and the northern sections of the application area, generally occurring below 1120 m above sea level (a.s.l.). High variability in vegetation structure and species composition were evident throughout this sub-unit, ranging from short-to-tall open shrubland (*Euclea sekhukhuniensis-Elephantorrhiza praetermissa-Grewia vernicosa* communities), microphyllous dominated habitat (*Vachellia karroo-Grewia flava-Bolusanthes speciosa* communities in the north), and open bushveld habitat with a good representation of both broadleaf shrubs and trees (*Combretum apiculatum-Peltophorum africanum* communities in the east). Natural ecological processes are moderately modified (fragmentation and loss of habitat integrity), but still able to support diverse floral communities and has enough resilience to limit AIP proliferation and bush encroachment. Refer to representative photos below:



Typical habitat associated with the Open Bushveld within the application area.

The **Mountain Bushveld** sub-unit is the largest of the sub-units associated with the application area. This sub-unit is associated with mountainous terrain generally occurring above 1120 m a.s.l., but below 1600 m a.s.l. A greater diversity in the broadleaf floral communities is associated with this sub-unit but like the Open Bushveld, the variability on the vegetation communities is high. Despite appearing to be homogenous in its vegetation structure and composition, the floral communities are distributed in a mosaic-like pattern. The aspect of the hills, steepness of the hills, and biophysical nature (especially rockiness) of the habitat contributes greatly to vegetation structure and composition. Poaching in the area has resulted in some herbivore exclusion and could impact on savanna ecology in the long term; however, at present no immediate impacts from herbivore exclusion are evident. Most of this sub-unit has retained high levels of habitat integrity and thus natural processes and dispersal corridors are largely intact. Refer to representative photos below:





Typical habitat associated with the Mountain Bushveld within the application area.

Comprising a small extent within the application area (southern portion), the **Wooded Cliffs** differs from the others in that the woody composition is better represented, forming thickets with a closed canopy cover. Evergreen trees are also better represented in the Wooded Cliffs than in the Mountain or Open Bushveld sub-units. The patchy distribution of the Wooded Cliffs within the hilly and mountainous areas are due to their formation being so closely associated with fire patterns. Within mountain kloofs²², Wooded Cliffs (and often forests) are protected from fire. The sharp change in topography from mountain slopes to kloof or drainage lines prevents fire from reaching these areas and this results in a rapid (or sharp) transition from grassland and bushveld communities to kloof thickets. The Wooded Cliffs have been excluded from anthropogenic impacts and are still able to support diverse floral communities. Refer to representative photos below:



Typical habitat associated with the Wooded Cliffs within the application area.

²² (In South Africa) a steep-sided, wooded ravine or valley. (noun): deep valley with high straight sides.







BIODIVERSITY PRIORITY AREAS					
CBA 2	EN Ecosystem	Sekhukhune Mountainlands	NPAES Priority Focus Area	Highest Biodiversity Importance Area (Mining and Biodiversity Guidelines)	
Confirmed functional.	Confirmed. Several key biodiversity features of the EN ecosystem are associated present in this habitat unit (both vegetation types and plant species).		Confirmed. Adequate habitat connectivity is present, as well as suitable biodiversity features that would necessitate protection/conservation, and hence considered a good candidate for protected area expansion.	Confirmed. Several priority biodiversity features are associated with this habitat unit.	
PLANT SPECIES OUTCOME					
SPECIES NAME	POC	STATUS	SPECIES NAME	POC	STATUS
<i>Berchemia zeyheri</i>	Confirmed	NFA	<i>Polygala sekhukhuniensis</i>	Medium	VU
<i>Brachystelma</i> spp.	High	LEMA	<i>Scadoxys puniceus</i>	Confirmed	LEMA.
<i>Ceropegia</i> spp.	High	LEMA	<i>Sclerocarya birrea</i> subsp. <i>caffra</i>	Confirmed	NFA
<i>Combretum petrophilum</i>	Medium-High	Rare	<i>Searsia sekhukhuniensis</i>	Medium	Rare
<i>Cymbopappus piliferus</i>	Low	VU	<i>Streptocarpus latens</i>	Low	Rare
<i>Dicliptera fruticosa</i>	High	NT	<i>Stapelia</i> spp.	Medium	LEMA.
<i>Elaeodendron transvaalense</i>	Confirmed	NT. LEMA	Sensitive species 92	Confirmed	VU. LEMA. TOPS
<i>Elephantorrhiza praetermissa</i>	Confirmed	Rare. LEMA	Sensitive species 124	High	CR
<i>Hesperantha bulbifera</i>	Low	Rare	Sensitive species 587	Confirmed	Rare
<i>Jamesbrittenia macrantha</i>	Confirmed	NT. LEMA	Sensitive species 691	Medium	VU
<i>Khadia alticola</i>	Low	Rare	Sensitive species 998	Low	EN
<i>Lydenburgia cassinoides</i>	Confirmed	NT. NFA	Sensitive species 1086	Low	EN
<i>Merwillia plumbea</i>	Confirmed	NT. LEMA	Sensitive species 1167	Confirmed	VU. LEMA. TOPS
<i>Orbea</i> spp.	Medium	LEMA	Sensitive species 1252	High	VU
<i>Pittosporum viridiflorum</i>	Confirmed	NFA			
SCREENING TOOL VERIFICATION					
Plant Species Theme			Terrestrial Biodiversity Theme		
Screening Tool Sensitivity	Verified Sensitivity		Screening Tool Sensitivity	Verified Sensitivity	
Medium	High recommended		High	High	



4.2 Faunal Field-Verified Results

Fauna have been broken down into four groups: mammals, avifaunal, herpetofauna and invertebrates. The faunal ecology of these groups is briefly discussed below, with the outcome of the Screening Tool (i.e., the animal species theme) verified or disputed at the end of each section.

Table 8: Mammals

MAMMAL OVERVIEW
<p>Mammals were abundant and observed throughout the application area ranging from smaller species like: <i>Aethomys chrysophilus</i> (Red Veld Rat) and <i>Atilax paludinosus</i> (Marsh mongoose), to larger carnivores and meso-carnivores such as: <i>Parahyaena brunnea</i> (Brown Hyaena), <i>Panthera pardus</i> (Leopard), <i>Caracal caracal</i> (Caracal) and <i>Canis mesomelas</i> (Black-backed Jackal). Larger herbivores were also noted within the application area; <i>Giraffa camelopardalis</i> (Giraffe), <i>Equus quagga</i> (Plain's Zebra), <i>Connochaetes taurinus</i> (Blue Wildebeest) and <i>Tragelaphus strepsiceros</i> (Greater Kudu) to name a few.</p> <p>The uniqueness of the region, with its higher altitude mountainous terrains, low lying valley floors, montane grasslands interspersed with drainage lines, wetlands and rivers provides a variety of suitable habitat conditions for mammal species. In comparison to the surrounding regions, and notably much of Sekhukhuneland, the application area is located within a local setting which is managed as a natural ecological system with extensive habitat for mammals. Habitat integrity has been marginally compromised as a result of increasing mining operations in the surrounding and immediate areas, however, the remaining natural areas as well as those within the application area contain adequate habitat, food and water resources to sustain a diversity of mammals.</p> <p>Six mammal SCC have been recorded within the application area, with a further six having either a medium or high POC. This further highlights the importance and sensitivity of the application area in terms of conserving mammal SCC. Ecological connectivity within the application area itself is largely intact, whilst connectivity between the surrounding areas is mostly intact with the exception of the areas to the north, which are more heavily mined and fenced off.</p>
<div style="display: flex; justify-content: space-around;">     </div> <p>a) <i>Parahyaena brunnea</i> (Brown Hyaena); b) <i>Caracal caracal</i> (Caracal); c) <i>Potamochoerus larvatus</i> (Bushpig); and d) <i>Panthera pardus</i> (Leopard).</p>





e) *Giraffa camelopardalis* (Giraffe); f) *Equus quagga* (Plain's Zebra); g) *Aonyx capensis* (Cape Clawless Otter) scat found along the banks of the Groot Dwars River; h) *Genetta tigrina* (Large-Spotted Genet) and i) *Canis mesomelas* (Black-backed Jackal).

MAMMAL SPECIES OUTCOME

SPECIES NAME	POC	STATUS	SPECIES NAME	POC	STATUS
<i>Panthera pardus</i> (Leopard)	Confirmed	VU	<i>Hydriectis maculicollis</i> (Spotted-Necked Otter)	Medium	VU
<i>Parahyaena brunnea</i> (Brown Hyaena)	Confirmed	VU	<i>Crocidura maquassiensis</i> (Makwassie Musk Shrew)	Medium	VU
<i>Rhinolophus smithersi</i> (Smither's Horseshoe Bat)	Confirmed	NT	<i>Amblysomus robustus</i> (Robust Golden Mole)	Medium	VU
<i>Redunca fulvorufula</i> (Mountain Reedbuck)	Confirmed	EN	<i>Chrysospalax villosus</i> (Rough-Haired Golden Mole)	Medium	VU
<i>Aonyx capensis</i> (Cape Clawless Otter)	Confirmed	NT	<i>Felis lybica</i> (African Wild Cat)	High	VU
<i>Leptailurus serval</i> (Serval)	Confirmed	NT	<i>Lycaon pictus</i> (African Wild Dog)	Low	EN
<i>Rhinolophus cohenae</i> (Cohen's Horseshoe Bat)	High	NT	<i>Ourebia ourebi ourebi</i> (Oribi)	Low	EN

SCREENING TOOL VERIFICATION

Animal Species Theme

Screening Tool Sensitivity	Verified Sensitivity
Medium	High recommended
High	High recommended



Table 9: Avifauna

AVIFAUNAL OVERVIEW

Throughout the application area a diversity of avifaunal species were observed as a result of the varied topography and associated habitats. Such landscape and vegetation structure (wooded and open valleys, rocky hillsides, wetlands, rivers, high elevation and montane grasslands) are commonly accepted as a primary determinant for avifaunal diversity. The application area caters for an abundance of habitat and food resources for avifauna. The mountainous areas with their well wooded drainage lines, rocky outcrops and dense shrub and tree layers with altering height offered structurally diverse habitat for avifauna. Vegetative diversity, provide increased food resources (plant material, seeds, insects and small mammals) and areas of refuge for avifauna as well as suitable nesting opportunities and vantage points for raptors. The open bushveld, drainage lines and riparian vegetation along the Groot Dwars River were dominated by insectivorous, granivorous and mixed feeders as well as species that are often associated with freshwater systems.

Three avifaunal SCC were recorded from the application area whilst a further eleven have a medium / high POC for the application area. Although there was a low observation rate of avifaunal SCC, it is likely attributed to the nature of these species, often flying off before direct observations can be made and the relatively small numbers they occur in.



a) *Halcyon albiventris* (Brown-hooded Kingfisher); b) *Nectarinia famosa* (Malachite Sunbird); c) *Chalcomitra amethystina* (Amethyst Sunbird); d) *Scleroptila shelleyi* (Shelley's Francolin).



e) *Circaetus pectoralis* (Black-chested snake eagle); f) *Buphagus erythrorhynchus* (Red-Billed Oxpecker); g) *Aquila spilogaster* (African Hawk-eagle) and h) *Circaetus cinereus* (Brown Snake Eagle).



AVIFAUNAL SPECIES OUTCOME					
SPECIES NAME	POC	STATUS	SPECIES NAME	POC	STATUS
<i>Gyps africanus</i> (White Backed Vulture)	Confirmed	CR	<i>Aquila rapax</i> (Tawny Eagle)	High	EN
<i>Torgos tracheliotos</i> (Lappet Faced Vulture)	Medium	VU	<i>Stephanoaetus coronatus</i> (Crowned Eagle)	High	EN
<i>Gyps coprotheres</i> (Cape Vulture)	Confirmed	VU	<i>Neotis denhami</i> (Denham's Bustard)	Medium	NT
<i>Polemaetus bellicosus</i> (Martial Eagle)	High	VU	<i>Falco biarmicus</i> (Lanner Falcon)	High	VU
<i>Aquila verreauxii</i> (Verreauxs Eagle)	High	VU	<i>Podica senegalensis</i> (African Finfoot)	Medium	VU
<i>Buphagus erythrorynchus</i> (Red-Billed Oxpecker)	Confirmed	T (SoER (2004))	<i>Eupodotis senegalensis</i> (White-bellied Korhaan)	Medium	VU
<i>Geronticus calvus</i> (Southern Bald Ibis)	High	VU	<i>Hydroprogne caspia</i> (Caspian Tern)	Low	VU
<i>Anthus chloris</i> (Yellow-Breasted Pipit)	Medium	VU			
SCREENING TOOL VERIFICATION					
Animal Species Theme					
Screening Tool Sensitivity			Verified Sensitivity		
Medium			High recommended		
High			High recommended		



Table 10: Herpetofauna**HERPETOFAUNAL OVERVIEW**

Many common and endemic species were observed during the site visits, with the highest diversity of reptiles occurring in the Sekhukhune Mountain Bushveld and rocky outcrops within. As the application area is largely undisturbed by mining and land transformation activities, it keeps a wide range and complexity of habitats suitable for reptile species. Although habitat for reptiles in the application area is abundant, observation rates of reptiles is often limited during surveys of shorter durations, notably as reptiles are inherently secretive and shy, making their detection and identification in the field challenging. Online databases for the area and region were used to supplement infield data. The Sekhukhune Mountain Bushveld, being the dominant habitat in the application area, provides high levels of habitat provision for reptiles, notably areas of refuge as well as suitable basking sites because of the abundance of rocky outcrops. Food resources like insects and small mammal species were abundant within this habitat. The montane grassland is largely undisturbed especially in the north-eastern corner of the application area; however, the decreased woody cover and lower abundances/diversity of food resources (insects and small mammals) resulted in lower observations of reptiles within this habitat. The drainage lines and Groot Dwars River are well wooded, providing ample cover and have an abundance of suitable food resources for reptiles, notably insectivores.

Amphibian diversity within the application area appears to be moderate, with most amphibian species observed in association with the freshwater habitats. Some moisture independent species were observed considerable distance from water sources. During the rainy season however, when the drainage lines and other areas of water collection (depressions in the landscape and rocky areas) do contain water, many amphibian species will make use of these water bodies for breeding purposes. During the winter months, it is likely that many amphibians, notably moisture independent species, will likely go into a state of aestivation, slowing down their metabolic rates and as such, their food intake requirements. Amphibian species predominantly rely on insects as a source of food, with some species also preying upon small arachnids. Invertebrate diversity will increase exponentially during the summer months, throughout the application area, providing ample food resources for amphibians. The increase in invertebrate numbers during this period is critical for amphibians, not only to replenish lost energy reserves post winter, but also to ensure that they have sufficient energy for breeding.

Four reptile SCC were recorded from the application area. No amphibian SCC were recorded, nor are any such species likely to occur within the application area. The application area is considered of increased importance for herpetofauna, providing highly suitable habitat for a diversity of species. During the site assessments, it was evident that the drainage lines that cover the study are well utilised by herpetofauna for breeding (amphibians) as well as movement corridors and foraging grounds (amphibians and reptiles).



a) *Gerrhosaurus flavigularis* (Yellow-throated Plated Lizard); b) *Platysaurus orientalis fitzsimonsi* (Fitzsimons's Flat Lizard); c) *Platysaurus orientalis orientalis* (Sekhukhune Flat Lizard); d) *Chondrodactylus turneri* (Turner's Thick-toed Gecko) and e) *Pachydactylus vansoni* (Van Son's Thick-toed Gecko).





f) *Agama atra* (Southern Rock Agama); g) *Chamaeleo dilepis* (Flap-Necked Chameleon); h) *Psammophis brevirostris* (Short-snouted Whip Snake); i) *Lycophidion variegatum* (Variegated Wolf Snake) and j) *Aparallactus capensis* (Cape Centipede-Eater).



k) *Pachydactylus affinis* (Transvaal Thick-Toed Gecko); l) *Kinixys lobatsiana* (Lobatse Hinge-backed Tortoise); m) *Amietia delalandii* (Delalande's River Frog); n) *Psammophis subtaeniatus* (Stripe-bellied Sand Snake).

HERPETOFAUNAL SPECIES OUTCOME






SPECIES NAME	POC	STATUS	SPECIES NAME	POC	STATUS
<i>Kinixys lobatsiana</i> (Lobatse Hinge-backed Tortoise)	Confirmed	VU	<i>Homoroselaps dorsalis</i> (Striped Harlequin Snake)	Medium	NT
<i>Platysaurus orientalis orientalis</i> (Sekhukhune Flat Lizard)	Confirmed	Endemic	<i>Python natalensis</i> (Southern African Rock Python)	Medium	P (TOPS)
<i>Platysaurus orientalis fitzsimonsi</i> (Fitzsimon's Flat Lizard)	Confirmed	NT	<i>Pachydactylus affinis</i> (Transvaal Thick-Toed Gecko)	Confirmed	Endemic

SCREENING TOOL VERIFICATION

Animal Species Theme	
Screening Tool Sensitivity	Verified Sensitivity
Medium	High recommended



Table 11: Invertebrates

INVERTEBRATE OVERVIEW
<p>The Sekhukhune Mountain Bushveld and the Freshwater habitats provide ideal habitat for invertebrates with the highest abundances and diversity observed herein. Although the Montane Grassland is largely intact and not disturbed, the invertebrate diversity and abundance was lower in comparison to the other habitats. It is however important to note that invertebrate species found within the montane grassland may associate with specific flora within and may not be found in the other habitat units, and vice versa. Coleopterans, Lepidopterans, Orthopterans and Dipterans were the most abundant orders observed within the application area during the site assessments. The application area, due to the structural diversity of habitats and floral species, provides an abundance of food resources for insect species. Water associated species in the order Odonata (Dragon and Damsel Flies) were commonly observed within the freshwater habitats.</p> <p>Arachnid species are notably harder to detect because their natural threat avoidance habits and their tendency to seek refuge during the daylight hours. During the site assessment the presence of arachnids was observed mostly in the rocky habitats and wooded areas. The abundance of insect species and small reptiles, indicates that food abundance for arachnids is high within the application area, whilst the vegetation diversity and varying soil and rock substrates provides a varied selection of habitats for arachnids, notably burrowing species, ground hunting species, ambush species as well as plant dwelling and web building species.</p> <p>The intact habitat and ecological functioning within the application area ensures that invertebrate species are well represented and abundant in the application area. Invertebrates are usually the most abundant macro-organisms within landscapes and often perform services vitally important for ecosystem functioning. Insects serve as pollinators, remove detritus material, bury dung and associated parasites below the surface helping to cycle nutrients back into the soil while decreasing the parasitic load within an environment, reducing the risk of disease. High invertebrate abundance and diversity can indicate a healthy functioning landscape as they play important roles within ecosystems.</p> <p>During the site assessment four invertebrate SCC were found within the application area, whilst a further two species have a medium and high POC. The unique location and vegetation type of the application area has resulted in an increased diversity of invertebrates, some of which are not known to occur outside of the Dwars Valley system. The application area is considered to be of increased importance for invertebrate species. It is important to preserve habitat for this important and largely understudied faunal group.</p>
<div style="display: flex; justify-content: space-around; align-items: center;">      </div> <p>a) <i>Hadogenes polytrichobothrius</i> (Flat Rock Scorpion); b) <i>Cheloctonus intermedius</i> (Intermediate Creeper); c) <i>Opisthophthalmus glabrifrons</i> (Burrowing scorpion); d) <i>Harpactirella overdijki</i> (Lesser Baboon Spider) and e) <i>Dresserus sp</i> (Ground Velvet Spiders).</p>





f) *Camponotus maculatus* (Spotted Sugar Ant); g) *Anthia thoracica* (Two-spotted Ground Beetle); h) Family Lampyridae (Fireflies); i) *Dictyophorus spumans* (Koppie Foam Grasshopper) and j) *Pycna sylvia* (Cicada).



k) *Dromica alboclavata* (Tiger Beetle); l) *Leptotes pirithous pirithous* (Common Zebra Blue); m) *Coenyra rufiplaga* (Secucuni Shade-fly); n) *Crocothemis erythraea* (Broad Scarlet) and o) *Alphocoris indutus* (Shield-Backed Bug).

INVERTEBRATE SPECIES OUTCOME

SPECIES NAME	POC	STATUS	SPECIES NAME	POC	STATUS
<i>Pycna sylvia</i> (Cicada)	Confirmed	Localised Endemic	<i>Taurhina splendens</i> (Regal Fruit Chafer)	T	Medium
<i>Hadogenes polytrichobothrius</i> (Flat Rock Scorpion)	Confirmed	P (TOPS)	<i>Opisththalmus glabrifrons</i> (Burrowing Scorpion)	P (TOPS)	Confirmed
<i>Dromica alboclavata</i> (Tiger Beetle)	Confirmed	P (TOPS)	<i>Ceratogyrus</i> sp (Horned Baboon Spider)	P (TOPS)	High

SCREENING TOOL VERIFICATION

Animal Species Theme

Screening Tool Sensitivity

Not indicated

Verified Sensitivity

High recommended



5 COMPLIANCE STATEMENT/ IMPACT STATEMENT

Based on the high-level *ground-truthed* results, including available desktop data and previous studies done in the area, figures 15-16 depict the sensitivity of each identified habitat unit for both the flora and fauna, respectively. The areas are awarded a sensitivity in terms of the presence or potential for SCC, habitat integrity and levels of disturbance, threat status of the habitat type, and the presence of unique landscapes.

For the floral assessment, the data gathered during the site visit indicate that the Degraded Habitat is of **Low** and **Moderately Low** Sensitivity, the Open Bushveld of **Moderately-High Sensitivity**, and the Freshwater Habitat, Mountain Bushveld, Wooded Cliffs, and Montane Grassland habitat of **High Sensitivity**. For the faunal assessment, the data gathered during the site visit indicate that the Degraded Habitat is of **Low** and **Moderately Low** Sensitivity, the Open Bushveld and Montane Grassland habitat of **Moderately-High** Sensitivity, and the Freshwater Habitat, Wooded Cliffs, and Mountain Bushveld of **High Sensitivity**.

In terms of the Screening Tool outcomes, the combined **terrestrial biodiversity theme** was confirmed high for most of the habitat units, excluding only the Degraded Habitat Unit. The medium sensitivity for the **plant species theme** was confirmed for all but the Degraded Habitat Unit; however, for some of the habitat units a high is recommended due to the confirmed presence of SCC (refer to Section 4.1). The **animal species theme outcome** was confirmed high for three SCC (two avifaunal and one mammal). A further 16 SCC (eight avifaunal, seven mammal and one reptile) SCC were indicated as medium sensitivity, of which thirteen species were confirmed as either medium or high POC post site assessment. Three species (two mammal and one avifaunal) which were indicated as medium sensitivity by the screening tool have been reduced to a low POC within the application area following the site assessment.

Below is a summary table of the Screening Tool outcomes and the field-verified results for each of the terrestrial biodiversity themes.



Table 12: Screening Tool verification – summary table.

Screening Tool Sensitivity	Verified Sensitivity	Outcome Statement/Plan of Study	Relevant Section Motivating Verification
ANIMAL SPECIES THEME			
MAMMALS			
High	High	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
Medium	Medium (high recommended)	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
AVIFAUNA			
High	High	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
Medium	Medium (high recommended)	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
REPTILES			
Medium	Medium (high recommended)	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
AMPHIBIANS			
Not indicated	High recommended	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
INVERTEBRATES			
Not indicated	High recommended	Terrestrial Animal Species Specialist Assessment Report	Section 4.2
PLANT SPECIES THEME			
DEGRADED HABITAT			
Medium	Low	Compliance Statement	Section 4.1
FRESHWATER HABITAT			
Medium	Medium (high recommended for EEDLs)	Terrestrial Plant Species Specialist Assessment Report	Section 4.1
MONTANE GRASSLAND HABITAT			
Medium	Medium (high recommended)	Terrestrial Plant Species Specialist Assessment Report	Section 4.1
SEKHUKHUNE MOUNTAIN BUSHVELD HABITAT			
Medium	Medium (high recommended)	Terrestrial Plant Species Specialist Assessment Report	Section 4.1
TERRESTRIAL BIODIVERSITY THEME			
DEGRADED HABITAT			
High	Low	Compliance Statement	Section 4.1
FRESHWATER HABITAT			
High	High	Terrestrial Biodiversity Specialist Assessment	Section 4.1
MONTANE GRASSLAND HABITAT			
High	High	Terrestrial Biodiversity Specialist Assessment	Section 4.1
SEKHUKHUNE MOUNTAIN BUSHVELD HABITAT			
High	High	Terrestrial Biodiversity Specialist Assessment	Section 4.1



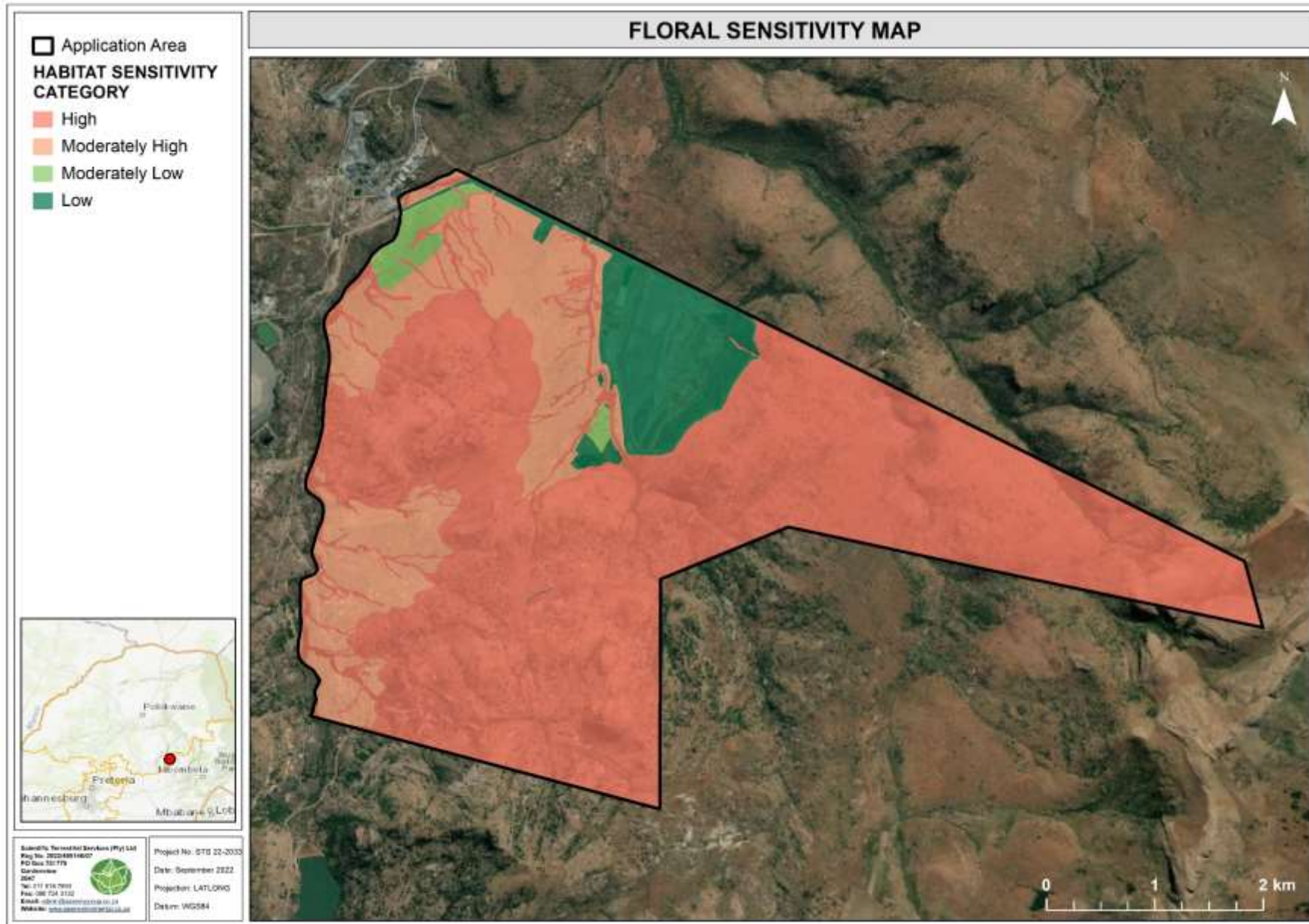


Figure 15: Floral sensitivity for the application area.



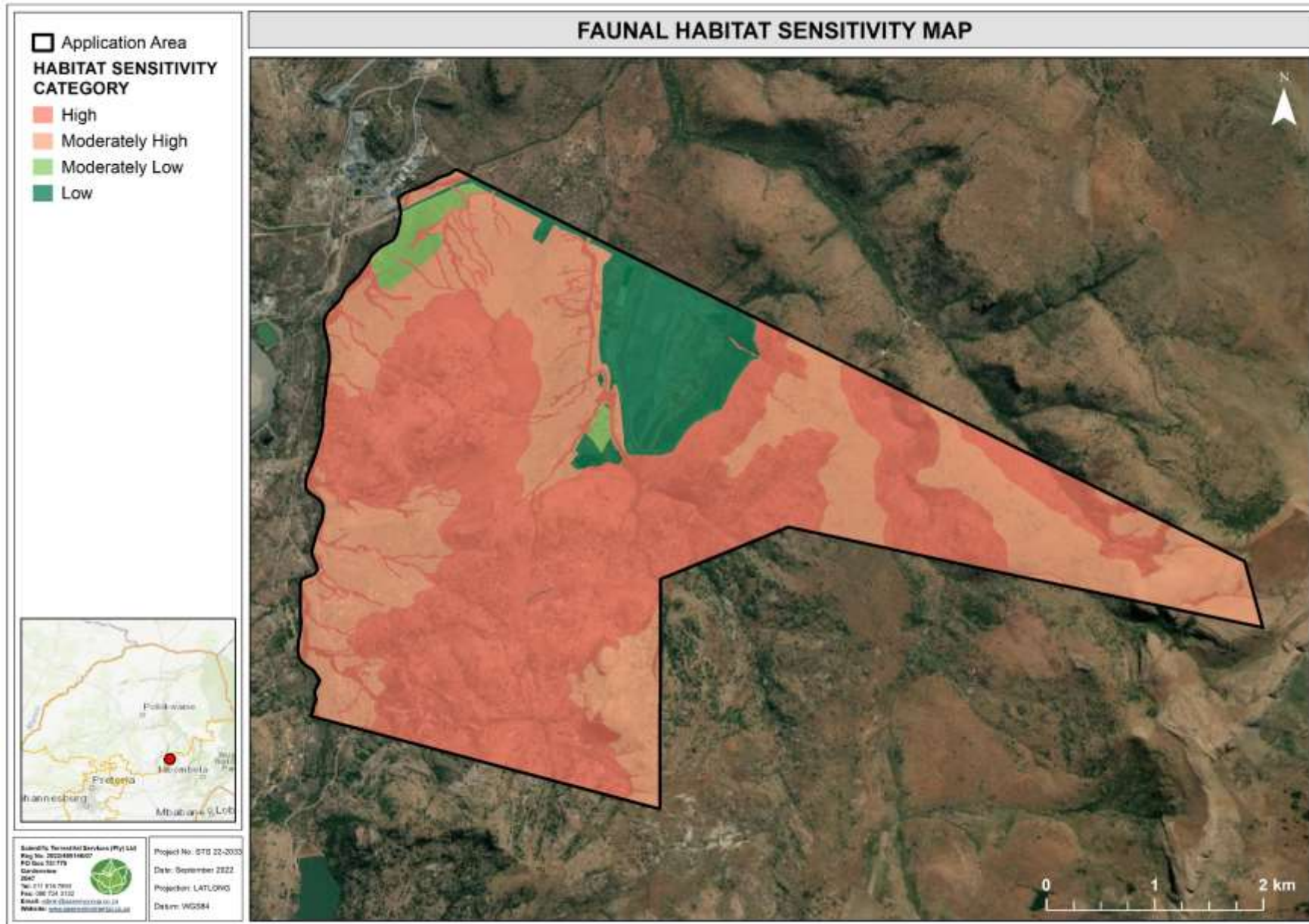


Figure 16: Faunal sensitivity for the application area.



Given that the application area is associated with confirmed medium to very high sensitivities (as per the screening outcomes), any form of surface impact is likely to result in significant and/or residual impacts²³ (negative) on the receiving environment (i.e., fauna, flora, and terrestrial habitat types). The draft biodiversity offset guideline states that: “*A biodiversity offset is required when a proposed listed or specified activity, or activities, is/are likely to have residual negative impacts on biodiversity of moderate or high significance.*”. In this regard, residual impacts associated with the loss of Freshwater Habitat, Montane Grassland, Mountain Bushveld, Open Bushveld, and all threatened species within these habitat units, will require offsetting.

The below diagram provides an indication of when offsetting may be required as taken and adapted from the draft biodiversity offset guidelines. Please note that impact significance can only be determined following detailed site assessments and the provision of footprint areas for the undertaking of impact assessments.

²³ A **residual biodiversity impact** is the impact of an activity, or activities, on biodiversity that remains after all efforts have been made to avoid and minimise the impacts of the activity, or activities, and to rehabilitate or restore the affected area to the fullest extent possible.



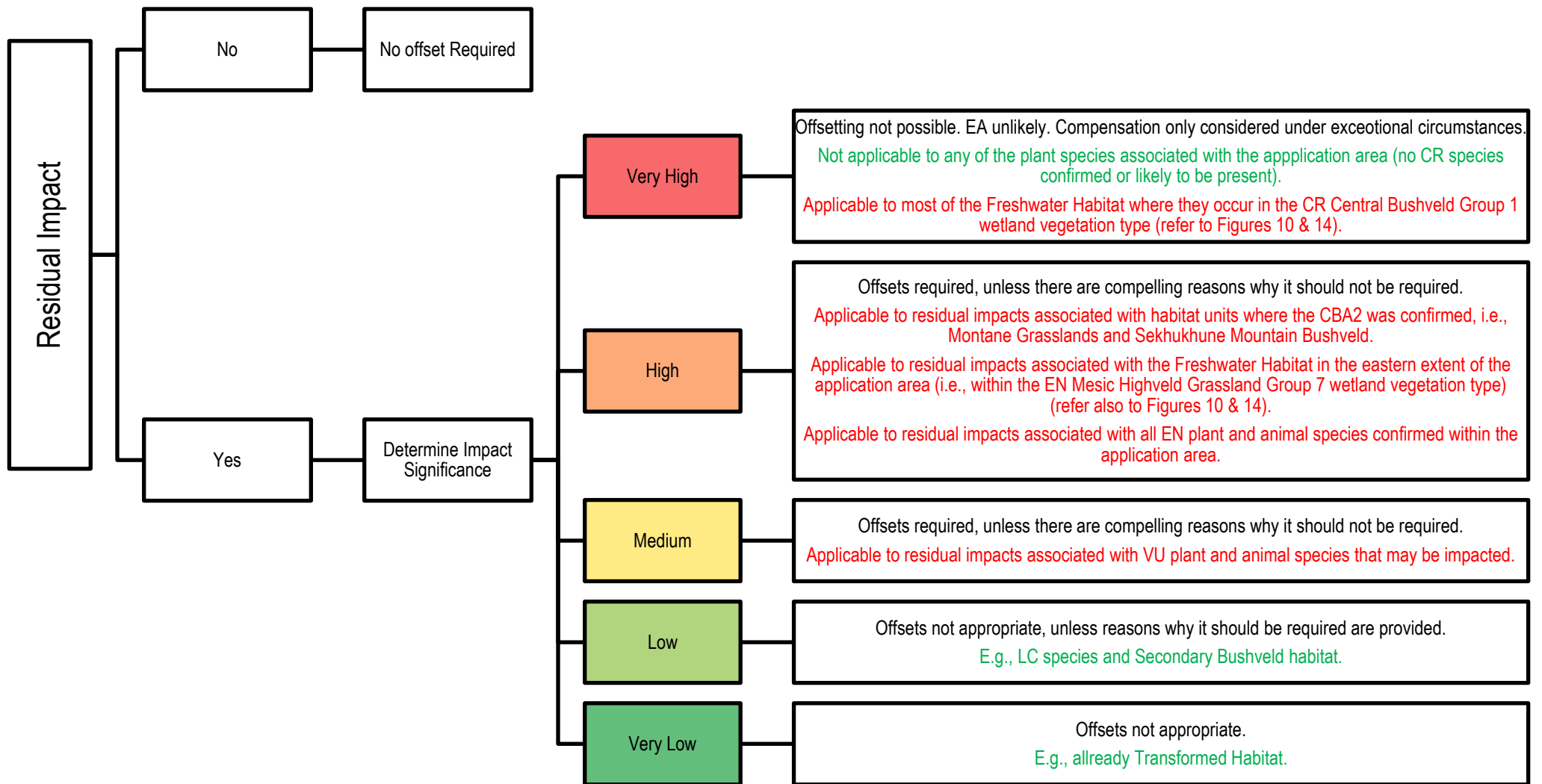


Figure 17: Diagram indicating potential for offsets required if invasive prospecting or future surface mining will take place.



6 REASONED OPINION

The proposed non-invasive prospecting, consisting of a detailed desktop assessment and research of historical prospecting data, is not anticipated to have any significant or residual impacts on the receiving environment (i.e., fauna, flora, and terrestrial habitat will not be impacted). However, if the detailed desktop assessment concludes that there is a need for additional borehole drilling (and associated prospecting road construction) as part of prospecting activities, impacts to the receiving environment will take place. In such an event, it is recommended that specialist terrestrial biodiversity assessments be undertaken during the summer months (late February highly recommended, especially for the Montane Grassland floral communities) for areas where prospecting (and associated prospecting roads) will be within habitat identified as sensitive (i.e., where the medium and high screening tool outcomes have been verified). If prospecting will take place in areas where a low sensitivity for the screening tool was recommended, a compliance statement will suffice.

It should be noted that this terrestrial assessment (including floral and faunal aspects) was undertaken at a high-level to ascertain potential risks and constraints. Due to the low quantum of risk presented by the proposed non-invasive prospecting, a detailed terrestrial assessment was not deemed necessary at this stage. As such, the data presented in this report should not be used for any other purpose than it is intended for.



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APPENDIX A: Indemnity and Terms of Use of this Report

The findings, results, observations, conclusions, and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and STS and its staff reserve the right to, at their sole discretion, modify aspects of the report including the recommendations if and when new information may become available from ongoing research or further work in this field, or pertaining to this investigation.

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This report must not be altered or added to or used for any other purpose other than that for which it was produced without the prior written consent of the author(s). This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.



APPENDIX B: Legislative Requirements

THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA, 1996

The environment and the health and well-being of people are safeguarded under the Constitution of the Republic of South Africa, 1996 by way of section 24. Section 24(a) guarantees a right to an environment that is not harmful to human health or well-being and to environmental protection for the benefit of present and future generations. Section 24(b) directs the state to take reasonable legislative and other measures to prevent pollution, promote conservation, and secure the ecologically sustainable development and use of natural resources (including water and mineral resources) while promoting justifiable economic and social development. Section 27 guarantees every person the right of access to sufficient water, and the state is obliged to take reasonable legislative and other measures within its available resources to achieve the progressive realisation of this right. Section 27 is defined as a socio-economic right and not an environmental right. However, read with section 24 it requires of the state to ensure that water is conserved and protected and that sufficient access to the resource is provided. Water regulation in South Africa places a great emphasis on protecting the resource and on providing access to water for everyone.

THE CONSERVATION OF AGRICULTURAL RESOURCES ACT, 1983 (ACT NO. 43 OF 1983) (CARA)

Removal of the alien and weed species encountered in the application area must take place in order to comply with existing legislation (amendments to the regulations under the CARA, 1983 and Section 28 of the NEMA, 1998). Removal of species should take place throughout the construction and operation, phases.

THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) (NEMA)

The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the associated Environmental Impact Assessment (EIA) Regulations (GN R326 as amended in 2017 and well as listing notices 1, 2 and 3 (GN R327, R325 and R324 of 2017), state that prior to any development taking place which triggers any activity as listed within the abovementioned regulations, an environmental authorisation process needs to be followed. This could follow either the Basic Assessment process or the Environmental Impact Assessment process depending on the nature of the activity and scale of the impact.

THE NATIONAL ENVIRONMENTAL MANAGEMENT BIODIVERSITY ACT, 2004 (ACT NO. 10 OF 2004) (NEMBA)

The objectives of this act are (within the framework of NEMA) to provide for:

- The management and conservation of biological diversity within the Republic of South Africa and of the components of such diversity;
- The use of indigenous biological resources in a sustainable manner;
- The fair and equitable sharing among stakeholders of the benefits arising from bio prospecting involving indigenous biological resources;
- To give effect to ratify international agreements relating to biodiversity which are binding to the Republic;
- To provide for cooperative governance in biodiversity management and conservation; and
- To provide for a South African National Biodiversity Institute to assist in achieving the objectives of this Act.

This act alludes to the fact that management of biodiversity must take place to ensure that the biodiversity of the surrounding areas are not negatively impacted upon, by any activity being undertaken, in order to ensure the fair and equitable sharing among stakeholders of the benefits arising from indigenous biological resources.

Furthermore, a person may not carry out a restricted activity involving either:

- a) A specimen of a listed threatened or protected species;



- b) Specimens of an alien species; or
- c) A specimen of a listed invasive species without a permit.

GOVERNMENT NOTICE NUMBER R.1020: ALIEN AND INVASIVE SPECIES REGULATIONS, 2020 (IN GOVERNMENT GAZETTE 43735), INCLUDING GOVERNMENT NOTICE NUMBER 1003: ALIEN AND INVASIVE SPECIES LISTS, 2020 (IN GOVERNMENT GAZETTE 43726) AS IT RELATES TO THE NEMBA

NEMBA is administered by the Department of Environmental Affairs and aims to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA. In terms of alien and invasive species. This act in terms of alien and invasive species aims to:

- Prevent the unauthorised introduction and spread of alien and invasive species to ecosystems and habitats where they do not naturally occur,
- Manage and control alien and invasive species, to prevent or minimise harm to the environment and biodiversity; and
- Eradicate alien species and invasive species from ecosystems and habitats where they may harm such ecosystems or habitats.

Alien species are defined, in terms of the National Environmental Management: Biodiversity Act, 2004 (Act no 10 of 2004) as:

- (a) A species that is not an indigenous species; or
- (b) An indigenous species translocated or intended to be translocated to a place outside its natural distribution range in nature, but not an indigenous species that has extended its natural distribution range by natural means of migration or dispersal without human intervention.

Categories according to NEMBA (Alien and Invasive Species Regulations, 2020):

- **Category 1a:** Invasive species that require compulsory control;
- **Category 1b:** Invasive species that require control by means of an invasive species management programme;
- **Category 2:** Commercially used plants that may be grown in demarcated areas, provided that there is a permit and that steps are taken to prevent their spread; and
- **Category 3:** Ornementally used plants that may no longer be planted.

THE NATIONAL FOREST ACT, 1998 (ACT NO. 10 OF 1998), AS AMENDED IN SEPTEMBER 2011 (NFA)

According to the department of Department of Forestry, Fisheries and the Environment (DFFE) (previously the Department of Agriculture, Forestry and Fisheries (DAFF)) ©2019 website (<https://www.daff.gov.za/daffweb3/>):

"In terms of the National Forests Act of 1998 certain tree species (types of trees) can be identified and declared as protected. The Department of Water Affairs and Forestry followed an objective, scientific and participative process to arrive at the new list of protected tree species, enacted in 2004. All trees occurring in natural forests are also protected in terms of the Act. Protective actions take place within the framework of the Act as well as national policy and guidelines. Trees are protected for a variety of reasons, and some species require strict protection while others require control over harvesting and utilisation."

Applicable sections of the NFA pertaining to the proposed project include the below:

Section 12:

Declaration of trees as protected

- 1) The Minister may declare-
 - a. particular tree,
 - b. a particular group of trees,
 - c. a particular woodland; or
 - d. trees belonging to a particular species, to be a protected tree, group of trees, woodland or species.
- 2) The Minister may make such a declaration only if he or she is of the opinion that the tree, group of trees, woodland or species is not already adequately protected in terms of other legislation.



- 3) In exercising a discretion in terms of this section, the Minister must consider the principles set out in section 3(3) of the NFA.

Section 15(1):

No person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence granted by the Minister or in terms of an exemption from the provisions of this subsection published by the Minister in the Gazette.

Contravention of this declaration is regarded as a first category offence that may result in a person who is found guilty of being sentenced to a fine or imprisonment for a period up to three years, or both a fine and imprisonment.

NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT, 2003 (ACT NO. 57 OF 2003) AS AMENDED²⁴ (NEMPAA)

The objective of this act is to provide for the protection and conservation of ecologically viable areas representative of South Africa's biological biodiversity and its natural landscapes and seascapes; for the establishment of a national register of all national, provincial and local protected areas; for the management of those areas in accordance with national norms and standards; for intergovernmental co-operation and public consultation in matters concerning protected areas; for the continued existence, governance and functions of South African National Parks; and for matters in connection thereof.

LIMPOPO ENVIRONMENTAL MANAGEMENT ACT (ACT NO. 7 OF 2003) (LEMA)

The objectives of this Act are:

- to manage and protect the environment in the Province;
- to secure ecologically sustainable development and responsible use of natural resources in the Province;
- generally, to contribute to the progressive realisation of the fundamental rights contained in section 24 of the Constitution of the Republic of South Africa Act, 1996 (Act No. 108 of 1996), and
- to give effect to international agreements effecting environmental management which are binding on the Province.

This Act must be interpreted and applied in accordance with the national environmental management principles set out in Section 2 of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

²⁴ Amendments to the NEMPAA:

- National Environmental Management: Protected Areas Amendment Act 31 of 2004 – Gazette No. 27274, No. 131. Commencement date: 1 November 2005 [Proc. No. R. 58, Gazette No. 28123]
- National Environment Laws Amendment Act 14 of 2009 – Gazette No.32267, No. 617. Commencement date: 18 September 2009 [Proc. 65, Gazette No. 32580]
- National Environmental Management: Protected Areas Amendment Act 15 of 2009 – Gazette No. 32660, No. 748. Commencement date: 23 October 2009 – except for sections 1 and 8 [Proc. No. 69, Gazette No. 32660]
- Schedule 2 amended by Government Notice R236 in Government Gazette 36295 dated 27 March 2013. Commencement date: 1 April 2013 of sections 1 and 8 (relating to Schedule 2) of the National Environmental Management Protected Areas Amendment Act, 15 of 2009 [Proc. No. 7, Gazette No. 36296]
- National Environmental Management: Protected Areas Amendment Act 21 of 2014 - Government Notice 445 in Government Gazette 37710 dated 2 June 2014. Commencement date: 2 June 2014.
- Schedule 2 amendment by General Notice 2 of 2016 in Government Gazette 39728 dated 25 February 2016. Commencement date: 25 February 2016.



APPENDIX C: Details, Expertise And Curriculum Vitae of Specialists

1. (a) (i) Details of the specialist who prepared the report

Christopher Hooton	BTech Nature Conservation (Tshwane University of Technology)
Christien Steyn	MSc Plant Science (University of Pretoria)
Jandre Potgieter	BSc. Zoology (University of Pretoria)

1. (A). (ii) The expertise of that specialist to compile a specialist report including a curriculum vitae

Company of Specialist:	Scientific Terrestrial Services (Pty) Ltd
Postal address:	29 Arterial Road West, Oriel, Bedfordview
Postal code:	1401
Telephone:	011 616 7893
	Fax: 011 615 6240/ 086 724 3132
Name / Contact person:	Christopher Hooton
E-mail:	chris@sasenvgroup.co.za
Qualifications	BTech Nature Conservation (Tshwane University of Technology) National Diploma Nature Conservation (Tshwane University of Technology)
Name / Contact person:	Christien Steyn
E-mail:	christien@sasenvgroup.co.za
Qualifications	MSc (Plant Science) (University of Pretoria) BSc (Hons) Plant Science (Invasion Biology) (University of Pretoria) BSc Environmental Science (University of Pretoria)
Registration / Associations	Member of the South African Association of Botanists (SAAB) Member of the Botanical Society of South Africa (BotSoc) Professional member of the South African Council for Natural Scientific Professions (SACNASP) Member of the Grassland Society of South Africa (GSSA) Member of the Land Rehabilitation Society of Southern Africa (LARSSA)
Name / Contact person:	Jandre Potgieter
E-mail:	jandre@sasenvgroup.co.za
Qualifications	PGCE Senior and intermediate phase (UNISA) BSc (Hons) Entomology (University of Pretoria) BSc Entomology (University of Pretoria)



1. (b) a declaration that the specialist is independent in a form as may be specified by the competent authority

I, Christopher Hooton, declare that -

- I act as the **independent specialist (reviewer)** in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant legislation and any guidelines that have relevance to the proposed activity;
- I will comply with the applicable legislation;
- I have not, 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.



Specialist Signature

I, Christien Steyn, declare that -

- I act as the **independent specialist** in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant legislation and any guidelines that have relevance to the proposed activity;
- I will comply with the applicable legislation;
- I have not, 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



Signature of the Specialist

I, Jandre Potgieter, declare that -

- I act as the **independent specialist** in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that June compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant legislation and any guidelines that have relevance to the proposed activity;
- I will comply with the applicable legislation;
- I have not, 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 June 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



Signature of the Specialist





SAS ENVIRONMENTAL GROUP OF COMPANIES – SPECIALIST CONSULTANT INFORMATION

CURRICULUM VITAE OF CHRISTOPHER HOOTON

PERSONAL DETAILS

Position in Company	Senior Scientist, Member Biodiversity Specialist
Joined SAS Environmental Group of Companies	2013

EDUCATION

Qualifications

BTech Nature Conservation (Tshwane University of Technology)	2013
National Diploma Nature Conservation (Tshwane University of Technology)	2008

AREAS OF WORK EXPERIENCE

South Africa – Gauteng, Mpumalanga, North West, Limpopo, KwaZulu-Natal, Eastern Cape, Western Cape, Northern Cape, Free State

Africa - Zimbabwe, Sierra Leone, Zambia

KEY SPECIALIST DISCIPLINES

Biodiversity Assessments

- Floral Assessments
- Faunal Assessments
- Biodiversity Actions Plan (BAP)
- Biodiversity Management Plan (BMP)
- Alien and Invasive Control Plan (AICP)
- Ecological Scan
- Protected Tree and Floral Marking and Reporting
- Biodiversity Offset Plan

Freshwater Assessments

- Freshwater Verification Assessment
- Freshwater (wetland / riparian) Delineation and Assessment
- Freshwater Eco Service and Status Determination
- Rehabilitation Assessment / Planning





SAS ENVIRONMENTAL GROUP OF COMPANIES – SPECIALIST CONSULTANT INFORMATION

CURRICULUM VITAE OF CHRISTIEN STEYN

PERSONAL DETAILS

Position in Company	Floral Ecologist
Joined SAS Environmental Group of Companies	2018

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Professional member of the South African Council for Natural Scientific Professions (SACNASP – Reg No. 127823/21)

Member of the Botanical Society of South Africa (BotSoc)

Member of the Grassland Society of South Africa (GSSA)

Member of the Land Rehabilitation Society of Southern Africa (LARSSA)

Member of the South African Association of Botanists (SAAB)

EDUCATION

Qualifications

MSc Plant Science (University of Pretoria)	2017
BSc (Hons) Plant Science (Invasion Biology) (University of Pretoria)	2014
BSc Environmental Science (University of Pretoria)	2013

Short courses and Training

- BotSoc Branch: Species Environmental Assessment Guidelines Course (2022).
- Advanced Grass Identification Course (2021).
- Practical Plant Identification, including Herbarium Usage and Protocols.
- Vegetation Classification and Mapping: Use of Geographic Information System for understanding vegetation pattern and biodiversity conservation.
- Introduction to Statistics for Biologists: Applications of plant ecology principles in plant conservation, i.e., species distribution modelling, alien plant invasions, conservation planning.
- International Plant Functional Trait Course: Hands-on, field-based exploration of plant functional traits, along with experience in the usage of plant traits data in climate-change research and ecosystem ecology. <https://www.uib.no/en/rg/EECRG/97477/plant-functional-traits-course-2>

AREAS OF WORK EXPERIENCE

South Africa – Gauteng, Mpumalanga, North West, Limpopo, KwaZulu-Natal, Northern Cape, Free State

KEY SPECIALIST DISCIPLINES

Biodiversity Assessments

- Terrestrial Ecological and Biodiversity Scoping Assessments
- Terrestrial Ecological and Biodiversity Screening Assessments
- Floral Assessments
- Input into Terrestrial Rehabilitation Plan design with the focus on the re-establishment of vegetation
- Floral Rescue and Relocation Plans
- Alien and Invasive Plant Control and Management Plans (AIPCPs)
- Alien and Invasive Plant Identification and awareness training
- Terrestrial Monitoring
- Protected Tree and Floral Marking and Reporting
- Desktop Studies, Mapping and Background Information Research





**SAS ENVIRONMENTAL GROUP OF COMPANIES –
SPECIALIST CONSULTANT INFORMATION**

CURRICULUM VITAE OF JANDRE POTGIETER

PERSONAL DETAILS

Position in Company	Faunal Ecologist
Joined SAS Environmental Group of Companies	2022

EDUCATION

Qualifications

PGCE Senior and intermediate phase (UNISA)	2021
BSc (Hons) Entomology (University of Pretoria)	2014
BSc Entomology (University of Pretoria)	2013

AREAS OF WORK EXPERIENCE

South Africa – Gauteng, Easter Cape

KEY SPECIALIST DISCIPLINES

Biodiversity Assessments

- Faunal Assessments

