TERRESTRIAL BIODIVERSITY AND PLANT SPECIES ASSESSMENT

Proposed Development on Portion 243 of Roodekrans 183-IQ to be known as Homes Haven Ext 65.

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Report prepared for:

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DOCUMENT GUIDE

According to Government Notice 320 dated 20 March 2020 and the procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation, the following criteria is applicable to that of a Terrestrial Biodiversity Assessment and plant species assessment.

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Executive summary:

The applicant wishes to establish a restaurant and offices on the identified study area. The project included a terrestrial biodiversity assessment on Portion 243 of the farm Roodekrans 183-IQ. The property was surrounded with a wall and contains various dwellings and gardens. The property is located within a residential Estate. Regional data indicates that the site is located within the Egoli Granite Grassland vegetation type which is considered Critically Endangered in terms of the 2021 Red List of Ecosystem, published by SANBI. GDARD Conservation plan (C Plan 3.3) indicated that a third of the western side of the site falls within an area considered as “irreplaceable area” and a small part in “Ecological Support Area.

A site visit was conducted on 20 July 2024. The site characteristics confirmed that the entire site was transformed, and that the area designated as “Irreplaceable area” by C Plan 3.3 was subjected to dumping and the area closer to the river was overgrown with black wattles and did not contain any indigenous vegetation. The Site Ecological Importance (SEI) was calculated using the methods developed in the Species Environmental Assessment Guidelines of 2022 (Version 2.1). The SEI indicated that most of the site had a Very Low Site Ecological Importance with a medium SEI for the riverbanks. This was done to preserve the corridors offered by the riparian system. It must be stated that exotic plants have overgrown the river system and that these alien invasive plants hinder the survival of indigenous plant species.

Two impacts were identified in the Impact Assessment section in 4.10 above. All impacts could be mitigated to a Low sensitivity with the implementation of the suggested mitigation measures.

There were no plants of Special Conservation Concern recorded on site and the field data corresponds with the data received from the DFFE screening tool which indicated a Low sensitivity for SCC plants. Eight plant species was identified on and around the site that is listed in the Alien and Invasive Species. These plants need to be controlled in accordance with the NEMBA Act. The specialist study concluded that the development would have a Low impact on the vegetation type of the Egoli Granite Grassland as there are no indigenous vegetation left on site. The area identified as irreplaceable area by C Plan 3.3 is currently rubbish dump and areas closer to the river is overgrown with alien invasive plants.

The site ecological importance for terrestrial biodiversity was compared to the site development plan proposed for the property. In my view, the development should be allowed to continue as there will be no impact on indigenous vegetation or plant species. It is recommended that the department allows the activity and in addition allows for the clean-up of the river vegetation, and the rubbish dump site.

1 INTRODUCTION

KEMS Pty Ltd has been appointed to undertake a Terrestrial Biodiversity assessment on Portion 243 of Roodekrans 183-IQ. The assessment could be undertaken in the winter months as it was evident that the site has been subjected to transformation in the past. The findings of this report have been based on numerous resources and information retrieved from a literature review and a physical field assessment.

1.1 Purpose of the report

This report contains the data gathered and interpreted, specifically taking the environmental screening results and assessment outcomes together with the promulgated Protocol for Terrestrial Biodiversity (Government Gazette 43110 of 20 March 2020) into account. A discussion on sensitive areas and species has been included in the report together with mitigation measures proposed to limit the extent of the impact (if any).

This Assessment forms part of the Application for Environmental Authorisation or exclusion thereof in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (as amended) currently underway for the project.

1.2 Terms of Reference

The terms of reference for the Terrestrial Biodiversity Assessment and Plant Species Assessment are as follows:

- Describe and map the vegetation types in the study area.
- Describe the floral biodiversity and record the plant species that occur in each vegetation type.
- Provide a species list of plants occurring on site, as well as any declared invasive plants.
- Determine the sensitivity of the site.
- Determine the presence and potential habitat of red and orange data species within the proposed study area and proximity, including the inventory of such species found on site.
- Provide a map indicating the location and photographic means of identified species which should be relocated before the start of construction.
- Identify and assess the impacts of development on the site's natural vegetation.

KEMS undertook a site visit on 23 July 2024. The survey was undertaken in winter to determine if any indigenous vegetation remains on site. The findings of the study are based on a desktop assessment of the study area, analysis of aerial imagery and a field survey of the site.

1.3 Assumptions, limitations, and gaps in knowledge

Red and orange list species are, by their nature, very rare and difficult to locate. No suitable habitat for listed plant species exists. It is important to note that, although the predicted impacts are mostly concerned with Red Data species, any sensitive non-Red Data species will also benefit from the proposed mitigation measures as they share the same habitat and face the same potential impacts as the Red Data species. The KEMS team has appropriate training as well as practical experience and access to wide-ranging databases to consider the derived species lists with high limits of accuracy. In instances where uncertainty exists regarding the presence of a species it is listed as a potential occupant, which renders the suggested mitigation measures and conclusions more vigorous.

Even though every care is taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time, and budget. Discussions and proposed mitigations are made on reasonable and informed assumptions built on *bone fide* information sources, as well as deductive reasoning. Deriving a 100% factual report based on field collecting and observations can only be done over several years and seasons to account for fluctuating environmental conditions and migrations. Since environmental impact studies deal with dynamic natural systems additional information may become known at a later stage. KEMS cannot accept responsibility for conclusions and mitigation measures made in good faith based on their own databases or on the information provided at the time of the directive. This report should therefore be viewed and acted upon with these limitations in mind. The project area and project description are based on the area as supplied by the applicant.

The study was undertaken in winter and outside of the flowering season and the recommended time in terms of the GDARD Minimum requirements for Biodiversity assessments. This was done to investigate if the site was transformed.

1.4 Study Approach

The study approach was adopted and modified in accordance with the methods described by David Hoare from David Hoare Consulting CC (Full credit) and Beryl Wilson (Full credit) at the McGregor Museum. The methods and approach have been modified to adhere to the specialized assessment for the study site as described.

1.5 Details of the specialist

The study was undertaken by Arno van den berg from KEMS enviro Pty Ltd. Arno has conducted biodiversity vegetation and flora studies for 14 years. Arno was the co-owner of Enviflora cc and is now in charge of KEMS enviro Pty Ltd. Arno has been registered with SACNASP as a Scientific Professional since 2015.

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2 METHODOLOGIES

To describe the overall site characteristics, Google earth imagery and 1:50 000 topographical maps were used and examined. Many parts of South Africa contain elevated levels of biodiversity at species and ecosystem level. At any single site there may be large numbers of species or high ecological complexity. Sites also vary in their natural character and uniqueness and the level to which they have been previously disturbed. Assessing the impacts of a proposed project often requires evaluating the conservation value of the site relative to other natural areas of the site in terms of biodiversity conservation. A simple approach to evaluating the relative importance of a site and the species found within it includes assessing the following:

- Is the site unique in terms of natural or biodiversity features?
- Is the protection of biodiversity features on site of national/provincial importance?
- Would development of the site lead to contravention of any international, national, or provincial legislation, policy, convention, or regulation?
- Is the site modified/disturbed in any way?

Thus, the general approach and angle adopted for this type of study is to identify any potential flora species that may be affected by the proposed study site. This means that the focus of this report will be on rare, threatened, protected and conservation-worthy species, as well as clearance of indigenous vegetation. A species list will be provided for the plant's species found on site. Rare, threatened, protected and conservation-worthy species and habitats are the highest priority, the presence of which is most likely to result in significant negative impacts on the ecological environment. The focus on national and provincial priorities and critical biodiversity issues is in line with National legislation protecting environmental and biodiversity resources.

2.1 Red data plants

South Africa has adopted the IUCN Red List Categories and Criteria to provide an objective, rigorous, scientifically founded system to identify Red List species. A published list of the Red List species of South African plants (Raimondo et al. 2009) contains a list of all species that are at risk of extinction. This list is updated regularly to take added information into account, but these are not published in book/paper format. Updated assessments are provided on the SANBI website (http://redlist.sanbi.org/). According to the website of the Red List of Southern African Plants (http://redlist.sanbi.org/), *the conservation status of plants indicated on the Red List of South African Plants Online represents the status of the species within South Africa's borders. This means that when a species is not endemic to South Africa, only the portion of the species population occurring within South Africa has been assessed. The global conservation status, which is a result of the assessment of the entire global range of a species, can be found on the International Union for the*

Conservation of Nature (IUCN) Red List of Threatened Species: http://www.iucnredlist.org. The South African assessment is used in this study. An explanation of the conservation categories is provided in Table 1. The purpose of listing Red List plant species is to provide information on the potential occurrence of species at risk of extinction in the study area that may be affected by the proposed infrastructure.

Table 1: Explanation of IUCN Ver. 3.1 categories (IUCN, 2001), and Orange List categories (Victor & Keith, 2004).

IUCN / Orange List category	Definition	Class
EX	Extinct	Extinct
CR	Critically Endangered	Red List
EN	Endangered	Red List
VU	Vulnerable	Red List
NT	Near Threatened	Orange List
Declining	Declining taxa	Orange List
Rare	Rare	Orange List
Critically Rare	Rare: only one subpopulation	Orange List
Rare-Sparse	Rare: widely distributed but rare	Orange List
DDD	Data Deficient: well-known, not enough information for assessment	Data Deficient
DDT	Data Deficient: taxonomic problems	Data Deficient
DDX	Data Deficient: unknown species	Data Deficient
LC	Least Concern	Least Concern

For all listed plant species that occur in the general geographical area of the site, a rating of the likelihood of it occurring on site is given as indicated in Table 2 below.

Table 2: Likelihood of occurrence.

Rating of likelihood	Definition
LOW	No suitable habitats on site / habitats on site do not match habitat for species;
MEDIUM	Habitats on site match general habitat description for species (e.g., grassland), but detailed microhabitat requirements (e.g., rocky grassland on shallow soils overlying dolomite) are absent on the site or are unknown from the descriptions given in the literature or from the authorities;
HIGH	Habitats found on site match very strongly the general and microhabitat description for the species (e.g., rocky grassland on shallow soils overlying dolomite);
DEFINITE	Species found on site.

2.2 Protected trees

Regulations published for the National Forests Act (Act 84 of 1998) as amended, provide a list of protected tree species for South Africa. The species on site and surrounding the site was checked against the list provided. The protected species list was also referenced against historical recorded data for the quarter degree grit cell to see if any of the species have been recorded historically.

2.3 Protected ecosystems

A literature review was conducted to investigate previous vegetation classification studies carried out on / near the study site. These studies were investigated before the field visit. To describe broad vegetation patterns within the study area, Mucina and Rutherford (2006) were used. To describe the conservation status of the ecosystem within the study area, Mucina and Rutherford (2006), the National List of Ecosystems that need Protection (NEMBA, 2004) and the method described in Strelitzia 17 (Driver et al., 2005) were used. This method classifies vegetation types into four categories, according to the percentage of untransformed natural habitat remaining (See Figure 1).

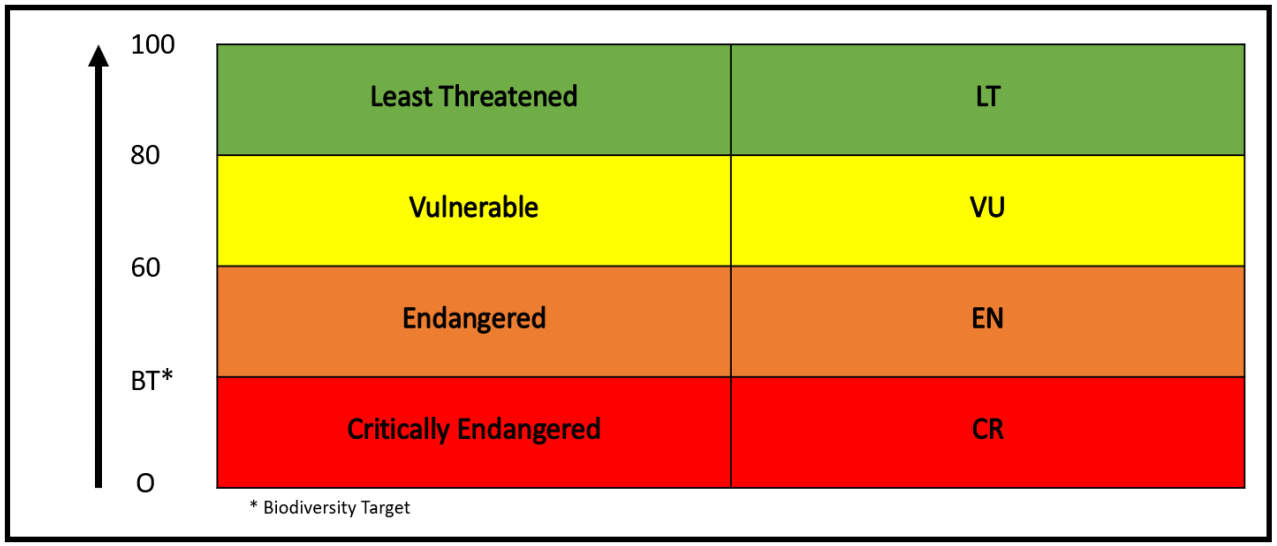


Figure 1: Classifications of vegetation types in accordance with their ecological status (Driver et al., 2005).

A survey was conducted on rare and protected plants that might possibly occur in the study area. For this investigation in the South African National Biodiversity Institute (SANBI) website and databases were consulted. The possible and actual presence of rare and protected species were recorded during the field visit.

2.4 Terrestrial Biodiversity Assessment

Thirty four percent of South Africa's 440 terrestrial ecosystems are threatened. Of these, 5% are critically endangered, 13% are endangered and 16% are vulnerable. The 5 linked sets of actions to conserve terrestrial biodiversity in priority areas are as follows:

- **Work with Production Sectors-** major land users such as agricultural, infrastructure, property developers, mining and forestry to develop and implement sector specific wise practice guidelines to minimise loss of natural habitat and species in threatened ecosystems, and to protect ecosystem functioning.
- **Strengthen bioregional programmes-** Conservation and sustainability development projects.
- **Minimise loss of habitat in threatened ecosystem**- promote stewardship among private and communal landowners to restrict certain land uses in terms of regulations in the biodiversity act within listed ecosystems.
- **Prevent and Manage the spread of invasive alien species**- focus on alien clearance efforts such as working for water, in areas where socio-economic needs coincide with areas of high biodiversity priority.
- **Expand formal protected areas to achieve biodiversity targets**- In consultation with implementing agencies such as SANParks and provincial conservation agencies.

2.5 Impact Assessment

The potential environmental impacts can be identified and evaluated according to their severity, duration, extent, and significance. The following sections will describe the various aspects in detail.

2.5.1 Impact Significance = Consequence x Likelihood

Environmental Significance (Impact)	Description
L (1 – 4.9)	**Low** environmental significance
LM (5 - 9.9)	**Low to medium** environmental significance
M (10 – 14.9)	**Medium** environmental significance
MH (15 – 19.9)	**Medium to high** environmental significance
H (20 – 25)	**High** environmental significance. Likely to be a fatal flaw.

The confidence level (the specialist's degree of confidence in the predictions and/or the information on which it is based will be ranked Low, Medium, or High. The consequence can be determined as follows:

$$\text{Consequence (C)} = \frac{(\text{Severity} + \text{Duration} + \text{Extent})}{3}$$

2.5.2 Severity Assessment and Rating

Rating	Description
1	Negligible / non-harmful / minimal deterioration (0 – 20%)
2	Minor / potentially harmful / measurable deterioration (20 – 40%)
3	Moderate / harmful / moderate deterioration (40 – 60%)
4	Significant / very harmful / substantial deterioration (60 – 80%)
5	Irreversible / permanent / death (80 – 100%)

2.5.3 Duration Assessment and Rating

Rating	Description
1	Less than 1 month / quickly reversible
2	Less than 1 year / quickly reversible
3	More than 1 year / reversible over time
4	More than 10 years / reversible over time / life of project or facility
5	Beyond life of project of facility / permanent

2.5.4 Extent Assessment and Rating

Rating	Description
1	Within immediate area of activity
2	Surrounding area within project boundary
3	Beyond project boundary
4	Regional / provincial
5	National / international

$$\text{Likelihood (L)} = \frac{(\text{Frequency} + \text{Probability})}{2}$$

2.5.5 Frequency Assessment and Rating

Rating	Description
1	Less than once a year
2	Once in a year
3	Quarterly
4	Weekly
5	Daily

2.5.6 Probability Assessment and Rating

Rating	Description
1	Almost impossible
2	Unlikely
3	Probable
4	Highly likely
5	Definite

2.6 Evaluation of Site Ecological Importance (SEI)

The Terrestrial biodiversity and Plant Species Protocols require specialists to identify:

- The natura and extent of the potential impact of the proposed development in species of conservation concern occurring on the proposed development site.
- The Potential impact of the proposed development on the habitat of the species of conservation concern
- Any alternative development site which could be of “low” sensitivity as identified by the screening tool and verified through the site sensitivity verification.

To spatially identify the different areas of importance for a species for a proposed development site and to facilitate transparent and comparable reporting of the potential impacts of development, a standardized metric for identifying site-based ecological importance for species, in relation to a proposed project with a specific footprint and suite of anticipated activities, is used. It allows for rapid spatial inspection and evaluation of impacts of proposed developments within the context of on-site habitats and SCC and facilitates integration of inputs from different specialist studies.

This process is necessary because the screening tool evaluates ‘environmental sensitivity’ at a larger scale than that of a proposed development site and frequently includes modelled data that require field verification. This assessment relies on the data collected during the necessary specialist surveys to provide a current evaluation of the on-site habitat conditions. This assessment does not replace the output of the screening tool but is more specific to the proposed development footprint and proposed project activity.

2.6.1 Method for the determination of Site Ecological Importance (SEI).

SEI is a function of the **biodiversity importance** (BI) of the receptor (e.g., species of conservation concern, the vegetation/fauna community or habitat type present on the site) and its resilience to impacts (**receptor resilience** [RR]) as follows:

SEI = BI + RR

BI in turn is a function of **conservation importance** (CI) and the **functional integrity** (FI) of the receptor as follows:

BI = CI + FI

Conservation importance (CI) is evaluated in accordance with recognised established internationally acceptable principles and criteria for the determination of biodiversity-related value, including the IUCN Red List of Species, Red List of Ecosystems and Key Biodiversity Areas (KBA; IUCN [2016]).

Conservation importance (CI) can be defined as: 'The importance of a site for supporting biodiversity features of conservation concern present, e.g., populations of IUCN threatened and Near Threatened species (CR, EN, VU and NT), Rare species, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through natural processes.

Functional integrity (FI) of the receptor (e.g., the vegetation/fauna community or habitat type) is defined here as the receptors' current ability to maintain the structure and functions that define it, compared to its known or predicted state under ideal conditions.

Functional integrity (FI) can be defined as: 'A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts.'

Receptor Resilience (RR)- 'The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.'

Table 3: Conservation Importance Criteria (CI)

Conservation importance	Fulfilling criteria
Very high	Confirmed or highly likely occurrence of CR, EN, VU or Extremely Rare[23] or Critically Rare[24] species that have a global EOO of < 10 km².
	Any area of natural habitat[25] of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent[26]) of natural habitat of EN ecosystem type.
	Globally significant populations of congregatory species (> 10% of global population).
High	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km². IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A. If listed as threatened only under Criterion A, include if there are less than 10 locations or < 10 000 mature individuals remaining.
	Small area (> 0.01% but < 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (> 0.1%) of natural habitat of VU ecosystem type.
	Presence of Rare species.
	Globally significant populations of congregatory species (> 1% but < 10% of global population).
Medium	Confirmed or highly likely occurrence of populations of NT species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals.
	Any area of natural habitat of threatened ecosystem type with status of VU.
	Presence of range-restricted species.
	> 50% of receptor contains natural habitat with potential to support SCC.
Low	No confirmed or highly likely populations of SCC.
	No confirmed or highly likely populations of range-restricted species.
	< 50% of receptor contains natural habitat with limited potential to support SCC.
Very low	No confirmed and highly unlikely populations of SCC.
	No confirmed and highly unlikely populations of range-restricted species.
	No natural habitat remaining.

Table 4: Functional integrity Criteria (FI)

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

Table 5: Resilience Criteria

Resilience	Fulfilling criteria
Very high	Habitat that can recover rapidly (~ less than 5 years) to restore > 75%[28] of the original species composition and functionality of the receptor functionality, or species that have a very high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a very high likelihood of returning to a site once the disturbance or impact has been removed.
High	Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed.
Medium	Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.
Low	Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a low likelihood of returning to a site once the disturbance or impact has been removed.
Very low	Habitat that is unable to recover from major impacts, or species that are unlikely to remain at a site even when a disturbance or impact is occurring, or species that are unlikely to return to a site once the disturbance or impact has been removed.

BI = CI + FI

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

SEI = BI (CI+FI) + RR

Site Ecological Importance		**Biodiversity Importance**				
		Very High	High	Medium	Low	Very Low
Receptor Resilience	Very High	Very High	Very High	High	Medium	Low
	High	Very High	Very High	High	Medium	Very Low
	Medium	Very High	High	Medium	Low	Very Low
	Low	High	Medium	Low	Very Low	Very Low
	Very Low	Medium	Low	Very Low	Very Low	Very Low

Table 6: SEI interpretation

Site ecological importance	Interpretation in relation to proposed development activities
Very high	Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e. last remaining populations of species, last remaining good condition patches of ecosystems/ unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
High	Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted; limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.
Medium	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Low	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Very low	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

The criteria above can therefore be determined in one single table:

Table 7: Examples of SEI to calculate sensitivity.

Habitat	Conservation importance	Functionality Integrity	Receptor resilience	Site Ecological Importance
Wetland vegetation	**High** **Small area (> 0.01% but < 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem Type.**	**Low** **Small (> 1 ha but < 5 ha) area.** **Almost no habitat connectivity but migrations are still possible across some modified or degraded natural habitat and a busy used road network surrounds the area. Low rehabilitation potential.** **Several minor and major current negative ecological impacts**	**Medium** **Species that have a moderate likelihood of returning to a site once the disturbance or impact has** **been removed.**	**BI (CI+FI) = Medium** **RR= Medium** **BI (Medium) + RR (Medium) = SEI (Medium)** **Minimization and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.**

3. THE STUDY SITE

3.1 Locality

The subject property is located at Portion 243 of Roodekrans 183- IQ, Gauteng. It is located within Roodepoort and is within the Ruimsig Country Estate. The site is accessible from Hendrik Potgieter Road into the Ruimsig Country Estate via Viljoen Road.

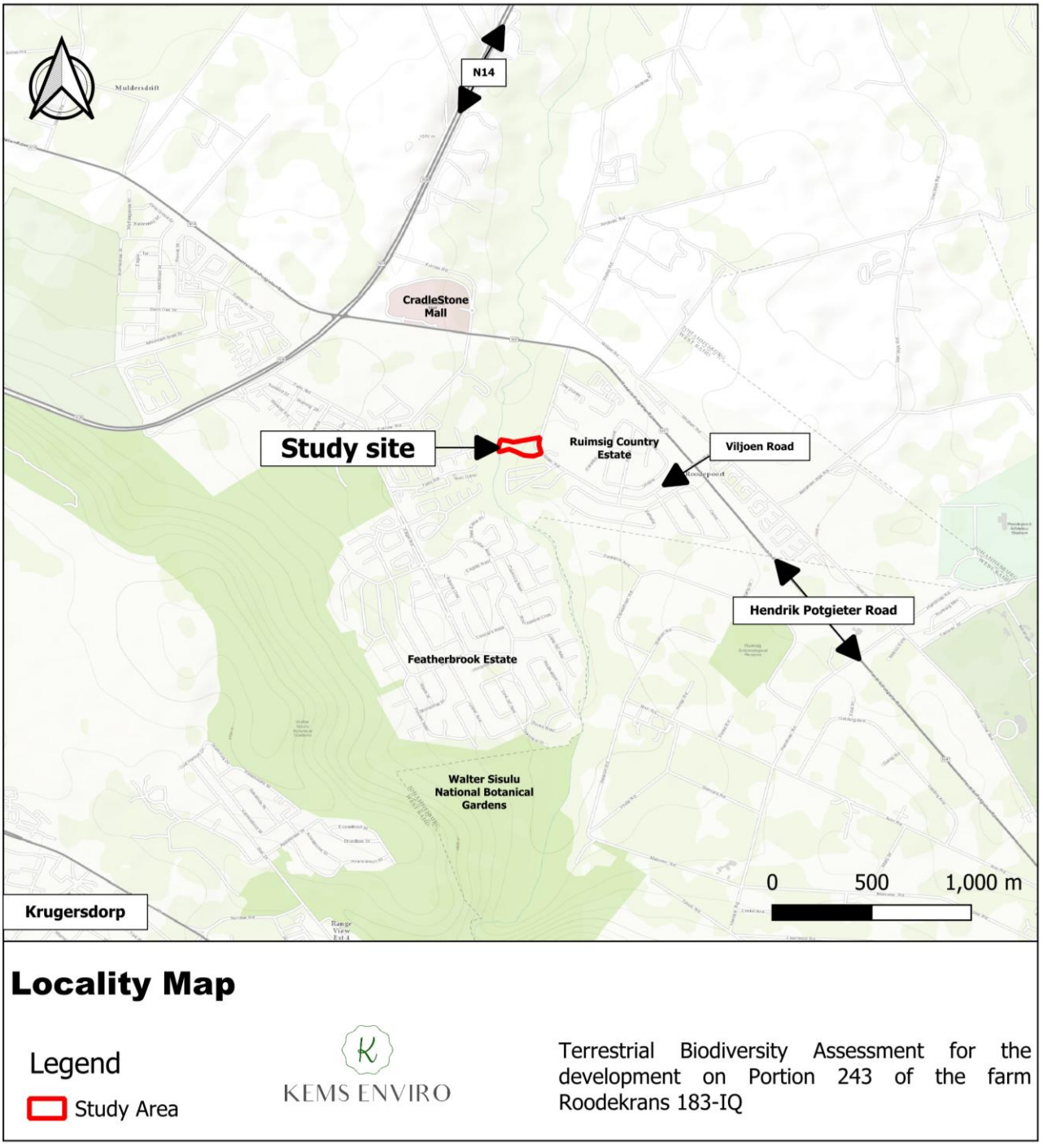


Figure 2: Regional locality of the study sites indicated in red.

3.1.1 Site Development Plan

The applicant proposes to establish offices on site as illustrated in the SDP below:



Figure 3: Site Development Plan

3.2 Regional Vegetation and Environmental Parameters

The study site falls within the **Egoli Granite Grassland vegetation** within the Mesic Highveld Grassland Bioregion group**.**

3.3 Legislative Requirements

South African Constitution 108 of 1996

The Constitution is the supreme law of the land and includes the Bill of rights which is the cornerstone of democracy in South Africa and enshrines the rights of people in the country. It includes the right to an environment which is not harmful to human health or well-being and to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures.

National Environmental Management Act (NEMA), 107 of 1998

NEMA requires that:

- "development must be socially, environmentally, and economically sustainable",
- "disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied", and
- "a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions**".**

NEMA states that "the environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage".

National Environmental Management: Biodiversity Act (NEMBA), 10 of 2004

In terms of NEMBA, the developer has a responsibility for:

- The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (not just by listed activity as specified in the EIA regulations),
- Promotion of the application of appropriate environmental management tools to ensure integrated environmental management of activities thereby ensuring that all development within the area is in line with ecological sustainable development and protection of biodiversity, and
- Limiting further loss of biodiversity and conserving endangered ecosystems.
- Adhering to all regulations and legislation promulgated because of the National Environmental Management: Biodiversity Act (NEMBA), 10 of 2004.

Furthermore, a person may not carry out a restricted activity involving a specimen of a listed threatened or protected species without a permit issued as per Chapter 7 of NEMBA.

Alien and Invasive Species Regulations, 2014 (NEMBA)

Alien and Invader plant species in South Africa are categorised according to one of the following categories:

- Prohibited Species: May not be introduced into the country.
- Category 1a Listed Invasive Species: those species that must be combatted or eradicated.
- Category 1b Listed Invasive Species: those species that must be controlled.
- Category 2 Listed Invasive Species: those species that require a permit to carry out a restricted activity within an area, as specified in the act / regulations.
- Category 3 Listed Invasive Species: those species that are subject to certain exemptions and prohibitions, as specified in the act / regulations.

National Water Act, 36 of 1998

The National Water Act provides for the protection of water resources, including protecting aquatic and associated ecosystems and their biodiversity and reducing and preventing pollution and degradation of water resources.

National Forests, 1998 (Act No. 84 of 1998)

The protection, sustainable management and use of forests and trees within South Africa are provided for under the National Forests Act, 1998 (Act No. 84 of 1998). Government Gazette No 26731 of August 2004, and any later revisions as released, provides a list of tree species protected under the National Forests Act.

Red List of Ecosystems of 2022

A national list of threatened terrestrial ecosystems and provides supporting information to accompany the list, including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed terrestrial ecosystems.

Gauteng Conservation Plan (C-Plan) Version 3.3

The most recent version of the Gauteng C-Plan indicates priority areas for terrestrial biodiversity in Gauteng Province. It is meant to serve as an important land-use decision support tool, and the foundation for the development of any Bioregional Plans within the Province.

Gauteng Department of Agriculture and Rural Development (GDARD) minimum requirements for Biodiversity Assessments.

The sensitivity mapping rules as specified in the GDARD Requirements for Biodiversity Assessments (2014) were utilized to determine appropriate buffer zones for the project area.

Species Environmental Assessment Guidelines V2.1 (2021)

The methods used in the Species Assessment Guidelines were used to evaluate and determine sensitivities of species on and around the site. The Sensitivity was determined by using the Species Environmental Assessment Guidelines through the Site Ecological Importance.

4 RESULTS AND EVALUATION

4.1 Broad vegetation types

4.1.1 Egoli Granite Grassland

The vegetation consists of Short to medium-high, dense tufted grassland dominated by *Themeda triandra* and accompanied by various other grasses, including *Hyparrhenia hirta, Eragrostis spp*., *Elionurus muticus, Heteropogon contortus* and *Trystachya leucothrix*. Usually uninterrupted continuous grassland cover (Mucina and Rutherford, 2006).

Climate: Summer rainfall occurs (Mean Annual Precipitation of 662 mm). Cool-temperate climate, with large differences in summer maximum and winter minimum temperatures, frequent occurrence of frost and large diurnal temperature differences.

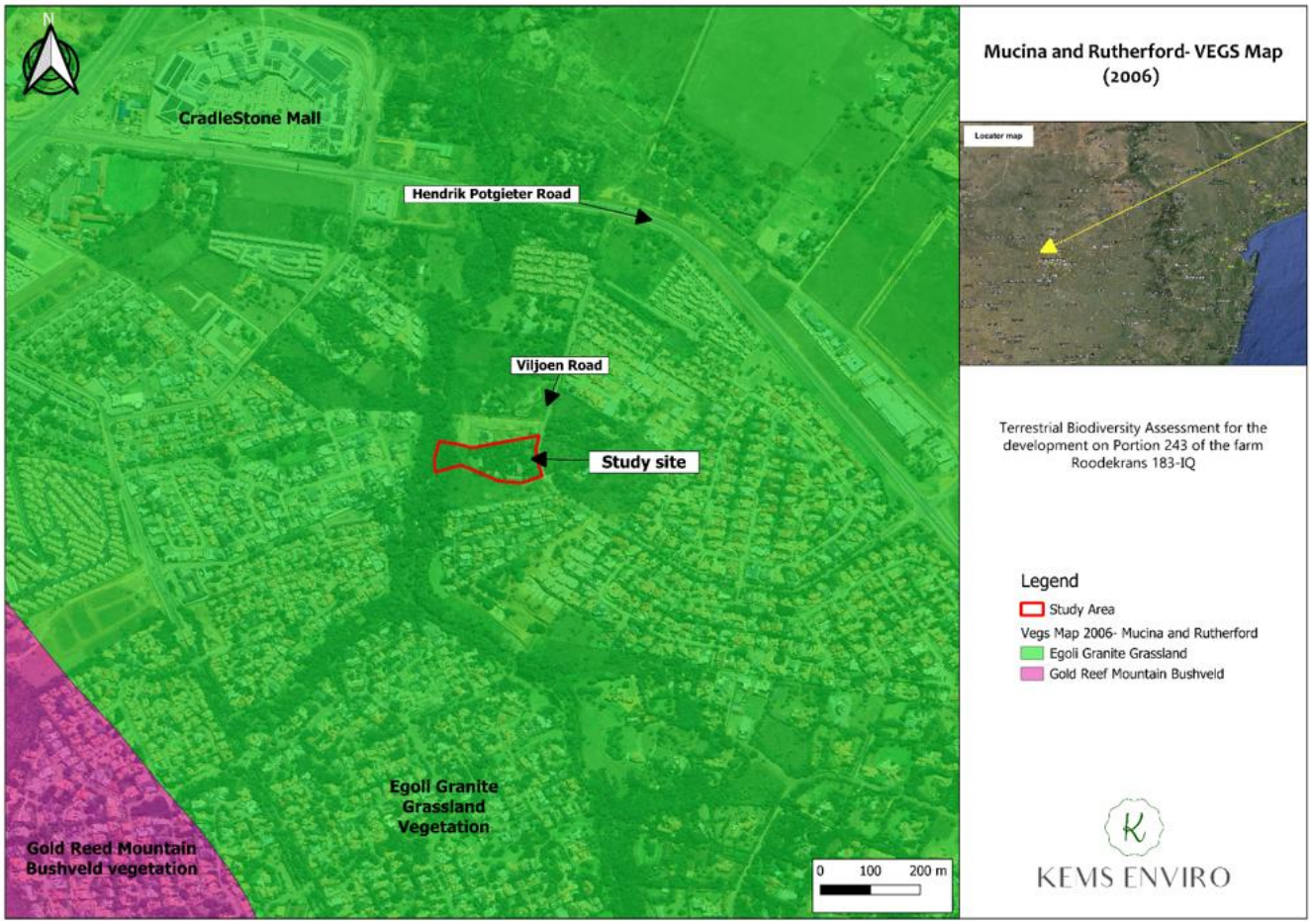


Figure 4: Vegetation Unit of the study site from Mucina and Rutherford (2006).

A list of expected common and dominant species in undisturbed vegetation includes the following (those with a "d" are dominant).

Graminoids*: Aristida canescens (d), A. congesta (d), Cynodon dactylon (d), Digitaria monodactyla (d), Eragrostis capensis (d), E. chloromelas (d), E. curvula (d), E. racemosa (d), Heteropogon contortus (d), Hyparrhenia hirta (d), Melinis repens subsp. repens (d), Monocymbium ceresiiforme (d), Setaria sphacelata (d), Themeda triandra (d), Tristachya leucothrix (d), Andropogon eucomus, Aristida aequiglumis, A. diffusa, A. scabrivalvis subsp. borumensis, Bewsia biflora, Brachiaria serrata, Bulbostylis burchellii, Cymbopogon caesius, Digitaria tricholaenoides, Diheteropogon amplectens, Eragrostis gummiflua, E. sclerantha, Panicum natalense, Schizachyrium sanguineum, Setaria nigrirostris, Tristachya rehmannii, Urelytrum agropyroides.*

Herbs: *Acalypha angustata, A. peduncularis, Becium obovatum, Berkheya insignis, Crabbea hirsuta, Cyanotis speciosa, Dicoma anomala, Helichrysum rugulosum, Justicia anagalloides, Kohautia amatymbica, Nidorella hottentotica, Pentanisia prunelloides subsp. latifolia, Pseudognaphalium luteo-album, Senecio venosus.*

Geophytic Herbs*: Cheilanthes deltoidea, C. hirta.*

Small Tree*: Vangueria infausta.*

Tall Shrub: *Rhus pyroides.*

Low Shrubs: *Anthospermum hispidulum, A. rigidum subsp. pumilum, Gnidia capitata, Helichrysum kraussii, Ziziphus zeyheriana.*

Succulent Shrub*: Lopholaena coriifolia*

4.2 Gauteng C Plan 3.3

The study site was evaluated in terms of C Plan 3.3. The site is located within an area identified as an "irreplaceable area" and a small piece of "Ecological Support Area" in terms of Gauteng Conservation Plan 3.3. This can be seen in **Figure 5** below.

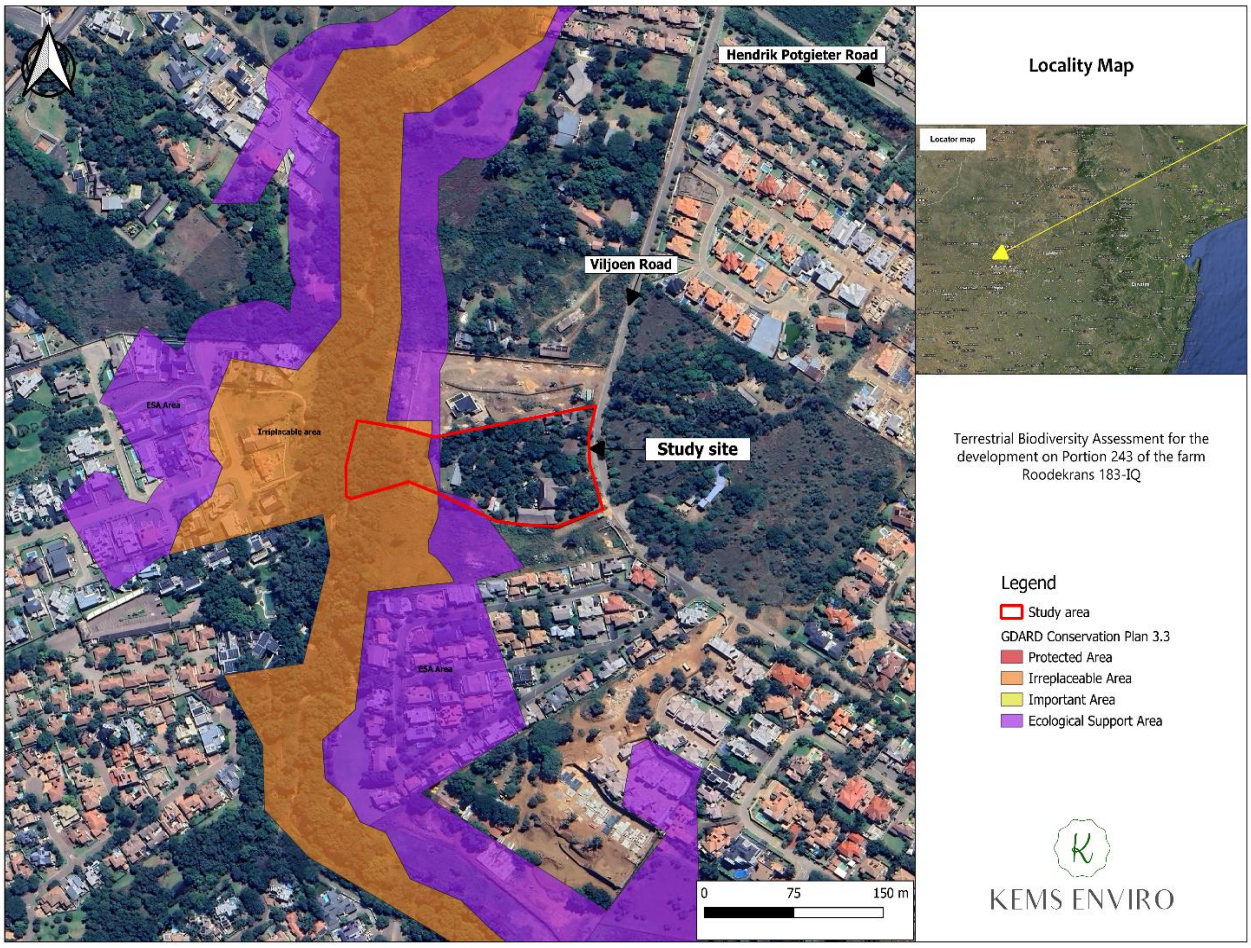


Figure 5: Gauteng C Plan 3.3

4.3 Protected areas

The study area is not located within any protected or conservation areas. The site is further not located within an area identified by the 2018 National Protected Areas Expansion Strategy (NPAES). The Cradle of Human Kind World Heritage Site borders on the northern side of the N14 Highway which is 2.2km away. Please refer to **Figure 6** below.

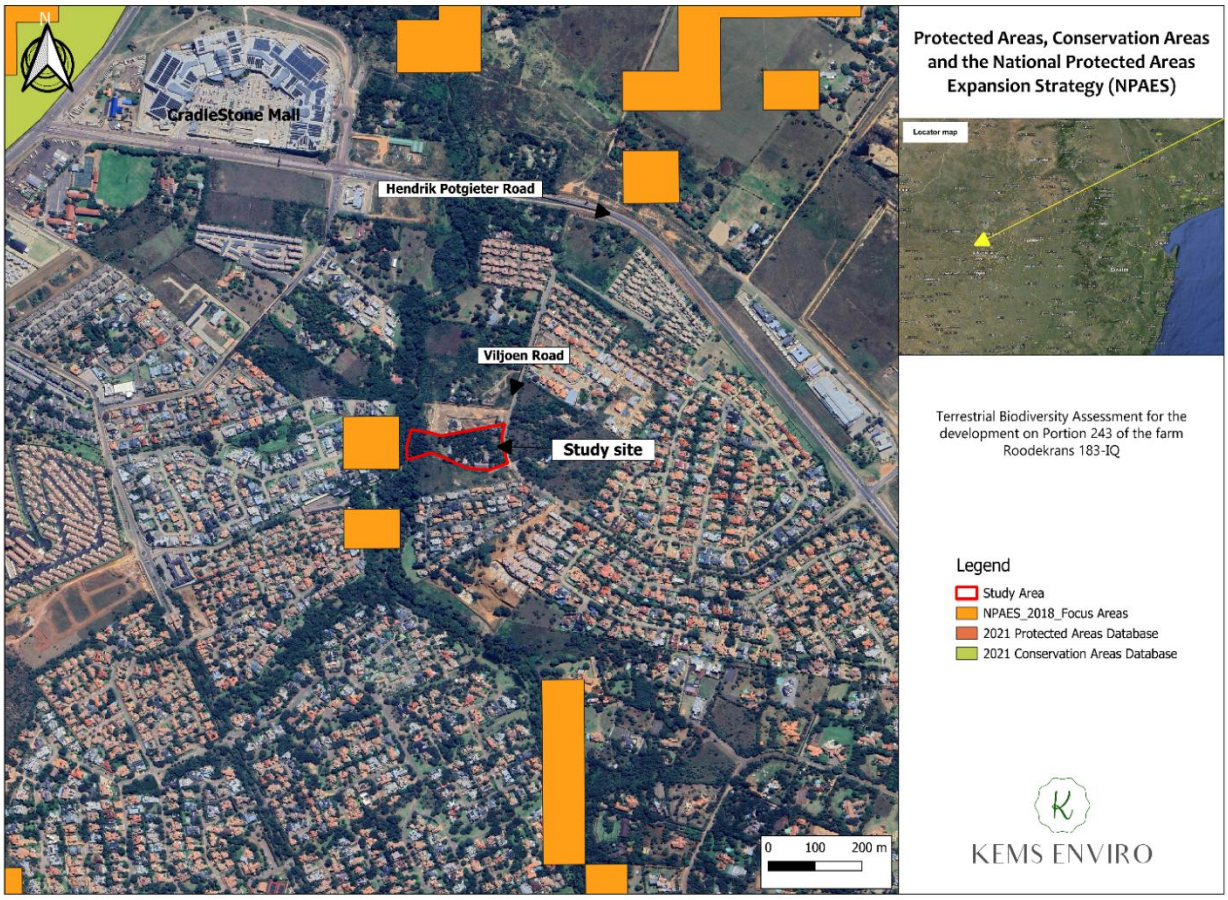


Figure 6: Protected and Conservation areas

4.4 Threatened Status of the Ecosystem in terms of the 2022 Red List of Ecosystems

The 2022 Red List of Ecosystems replaced the 2011 List of Threatened Ecosystems in need of protection. The remaining extent of vegetation types as captured and released by SANBI is illustrated on the maps below. The 2021 Red List of Ecosystems illustrates the remaining extent of the vegetation type. It is noted that the study area is indicated as entirely transformed in the map below. Please see the 2021 RLE in **Figure 7** below.

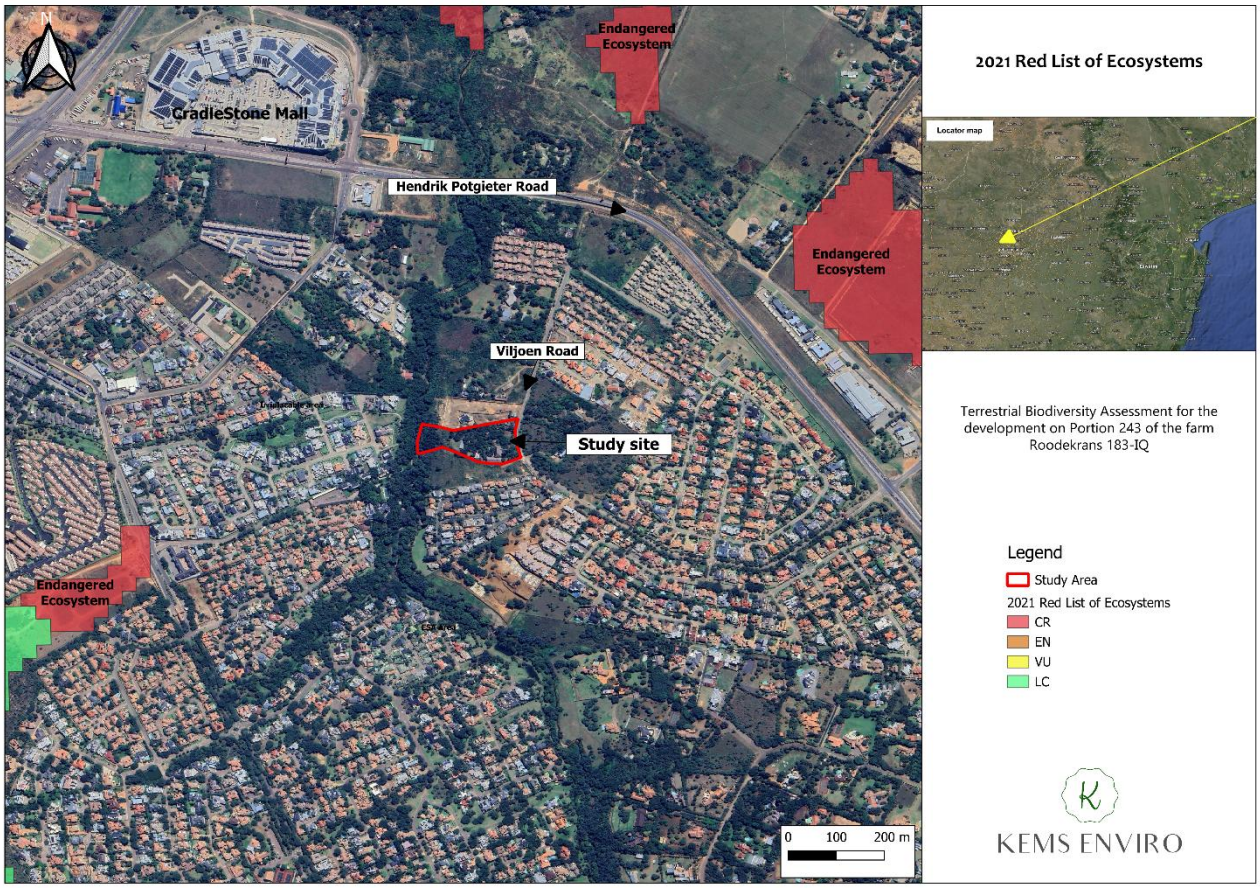


Figure 7: 2022 Red List of Ecosystems

4.5 DEFF Screening tool results

The DEFF Screening tool results indicated a Very High terrestrial biodiversity sensitivity for the study area. This is due to the site being located within a CBA 1 AND CBA 2 areas (Irreplaceable area in C Plan 3.3), and within an ESA 1 and ESA 2 area (Ecological Support Area in C Plan 3.3). The site is located within the Egoli Granite Grassland which is critically endangered and therefore are listed as can be seen in **Figure 8** below.

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	CBA 1
Very High	CBA 2
Very High	ESA 1
Very High	ESA 2
Very High	CR_Egoli Granite Grassland

Figure 8: Terrestrial Biodiversity DEFF results.

4.6 Habitat Assessment

The study site encompasses historical homestead and plots. **Figure 9** below illustrates the condition of vegetation found within the study site and the associated 200m assessment area around the site.

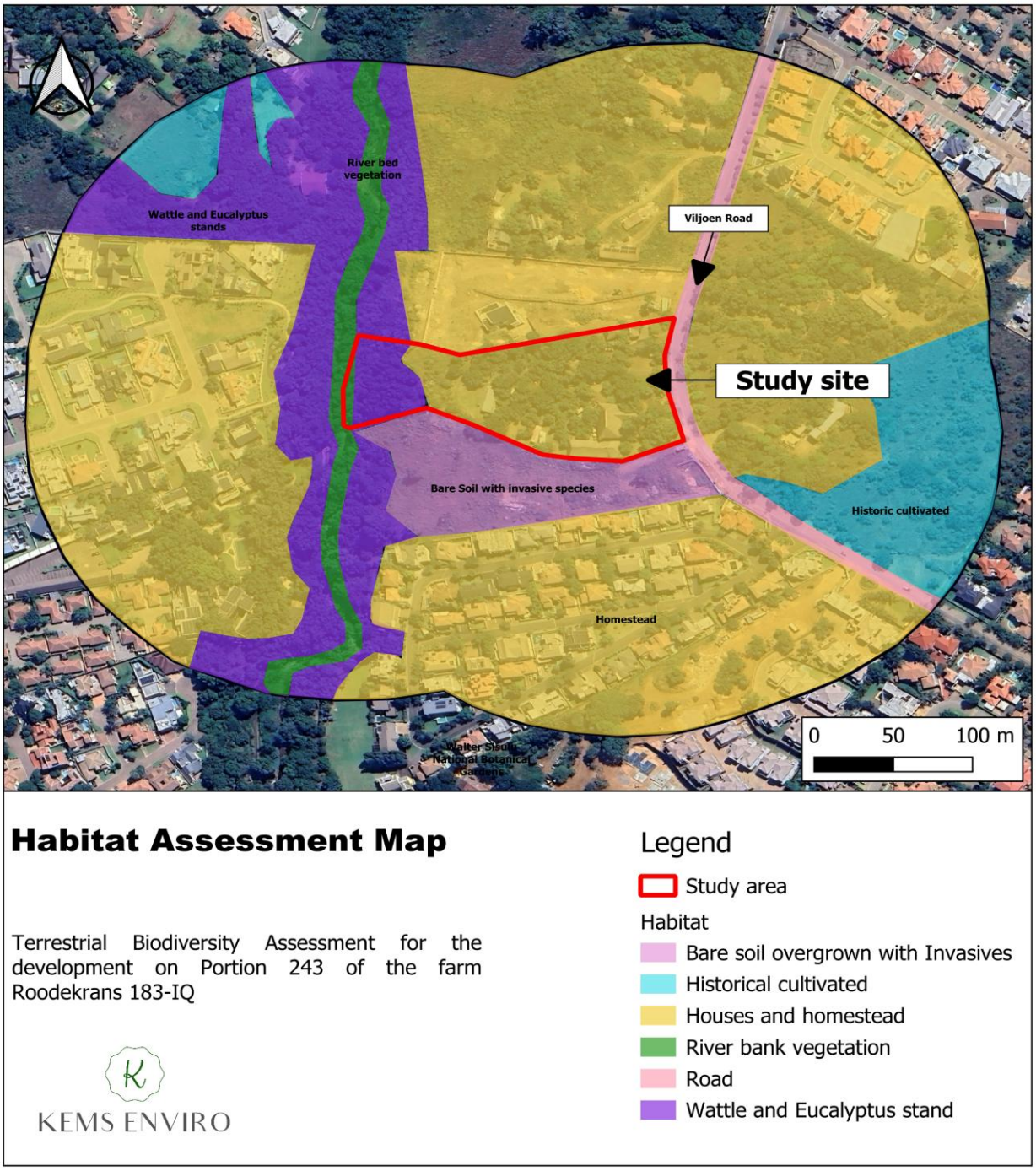


Figure 9: Habitat Assessment of the proposed development site.

The terrain assessment was undertaken on 21 June 2024. **Figure 10** below indicates the site characteristics as observed on site.



Figure 10: Habitat characteristicsencountered on the site.

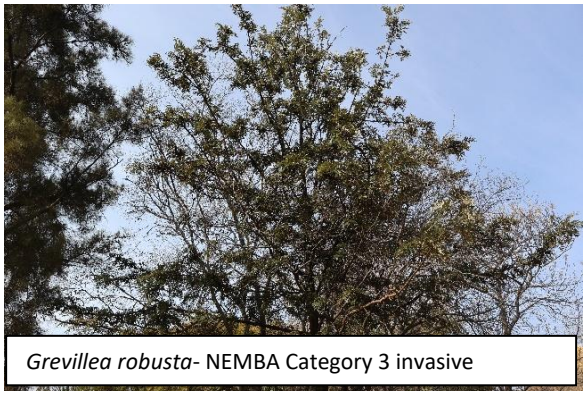
Plants encountered on site:



Melia azedarach- Nemba Category 1b invasive



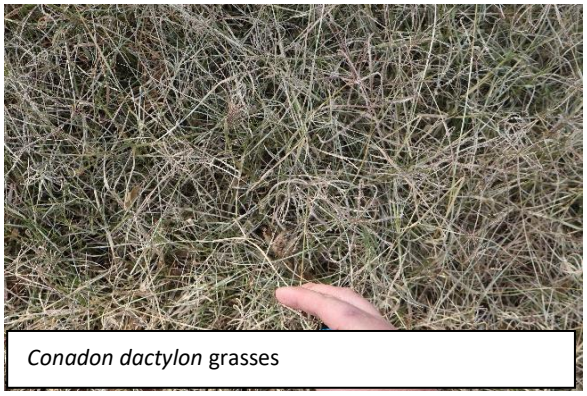
Solanum mauritianum- NEMBA Category 1b invasive



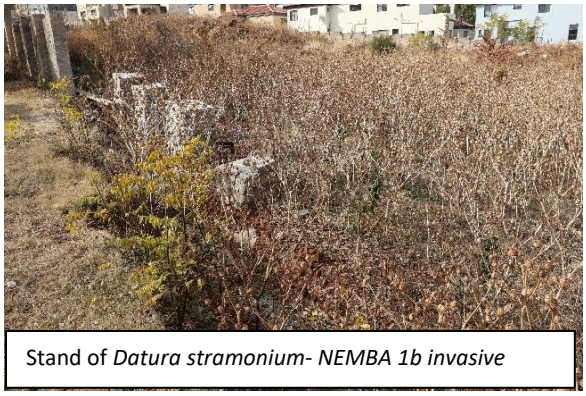
Grevillea robusta- NEMBA Category 3 invasive



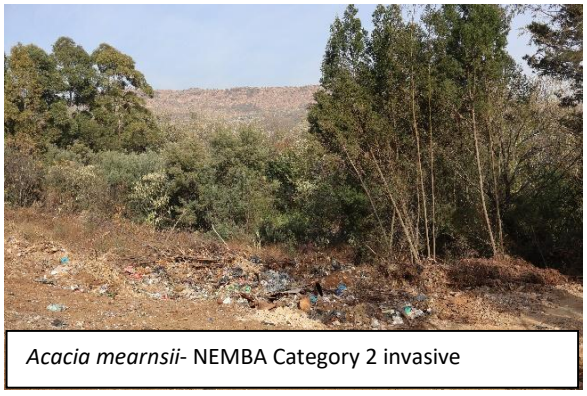
Yucca sp. and *Celtis africana*



Conadon dactylon grasses



Stand of *Datura stramonium- NEMBA 1b invasive*



Acacia mearnsii- NEMBA Category 2 invasive



Hyparrhenia hirta and *Conadon dactylon* grasses

Figure 11: Photos of plants encountered on ther study site.

4.7 Historical use of the site

Google earth imagery was used to track the historical use of the site. The Google Earth Assessment confirms that the site has been historically transformed and is not part of the remaining extent of the Tsakane Clay Vegetation type.

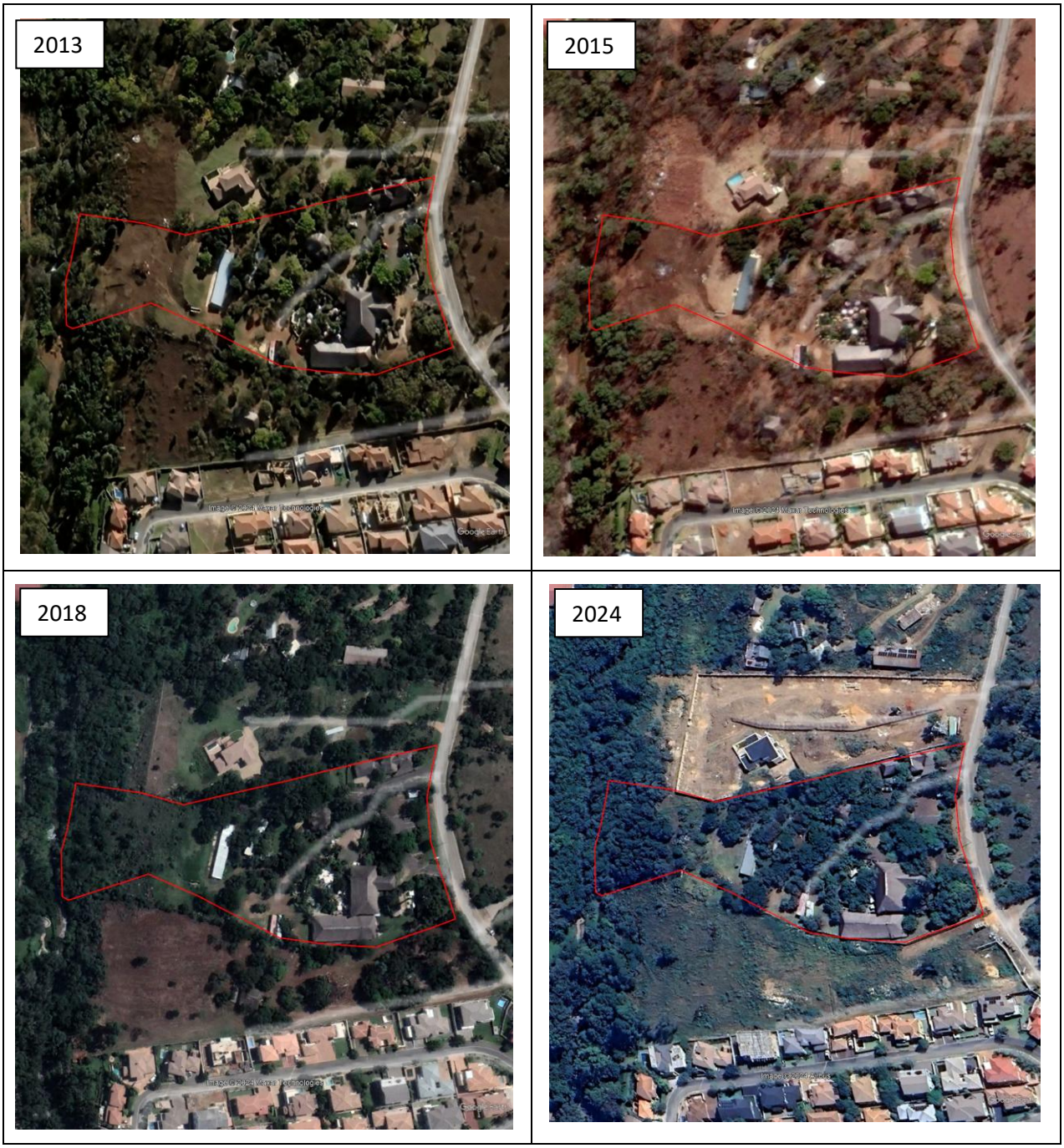


Figure 12: Historical use of the site from 2013 till present.

4.8 Vegetation found on site.

Species encountered on site and directly adjacent are listed below.

Table 8 : Checklist of Vegetation found around the site during June 2024

GROWTH FORM	SCIENTIFIC NAME	COMMENT(S)
Trees	*Acacia mearnsii*	*NEMBA Category 2*
	Celtis africana	
	Eucalyptus grandis	*NEMBA Category 1b within riparian areas*
	Grevillea robusta	*NEMBA Category 3*
	Melia azedarach	*NEMBA Category 1b*
Herbs and forbs	*Cirsium vulgare*	*NEMBA Category 1b*
	Conyza bonariensis	
	Datura stramonium	*NEMBA Category 1b*
	Solanum mauritianum	*NEMBA Category 1b*
	Yucca sp.	
Grasses / sedges	*Conadon dactylon*	
	Eragrostis chloromelas	
	Hyparrhenia hirta	
	Pennisetum clandestinum	*NEMBA Category 1b*

Field survey summary:

Table 9 : Field summary of plants on site.

Description	Total	Associated with vegetation type?
Trees	5 species	0
Herbs and Forbs	5 Species	0
Grasses and sedges	4 Species	2
TOTAL	**14**	**2**

The above-mentioned species were recorded within the study site. 2 out of the 14 plant species can be associated with vegetation expected from the Egoli granite grassland.

4.8.1 Alien and Invasive plant species

The list of Alien and Invasive plant species is presented. A total of 8 out of the recorded 14 plant were identified on and around the site that is listed in the Alien and Invasive Species Regulations of 2014 (NEMBA) which needs management. That accounts to 57% of plants on site.

4.9 Site Ecological Importance (SEI)

By applying the methodology described in **Section 2.6** of this report the Site Ecological Importance was calculated and is summarized in the tables to follow.

Table 10: Summary of Site Conservation Importance, Functional Integrity, and Resilience

Habitat	Conservation importance	Functionality Integrity	Receptor resilience	Site Ecological Importance
Riparian river bank vegetation	Medium Confirmed or highly likely occurrence of VU species. The river is a corridor for the movement of animals.	High > 10 ha for EN ecosystem types. Good habitat connectivity with fuctional corridors.	Medium Species have a moderate likelihood of returning to site once the disturbance or impact has been removed.	BI (CI+FI) = Medium RR= Medium BI (medium) + RR (medium) = **SEI (Medium)** Minimization and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Transformed Areas	Low No natural habitat remaining.	Very Low No habitat connectivity except for flying species or flora with wind-dispersed seeds.	Low Species that have a low likelihood of returning to a site once the disturbance or impact has been removed.	BI (CI+FI) = Very Low RR= Low BI (very low) + RR (low) = **SEI (Very Low)** Minimization mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

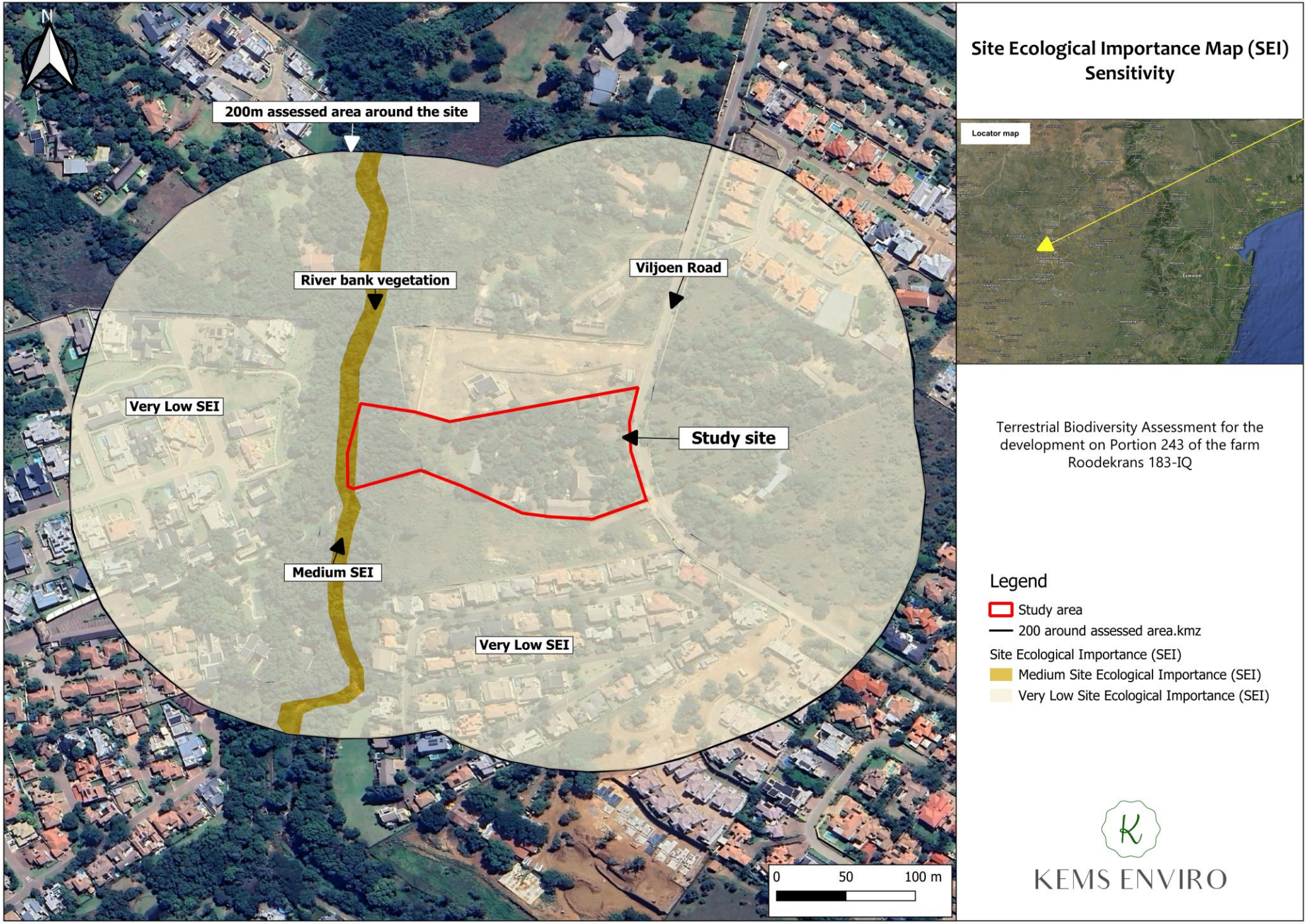


Figure 13: Sensitivity map.

4.10 Impact Assessment

Mitigation measures are proposed to ensure that the rating of significance could be reduced to a more acceptable rating. The impact assessment focuses on the operational aspects as the dams and cultivated areas have already been established. Mitigation measures are proposed to ensure that the rating of significance could be reduced to a more acceptable rating.

4.10.1 Vegetation and terrestrial biodiversity and plant species

Mitigation measures are proposed to ensure that the rating of significance could be reduced to a more acceptable rating. The impact assessment focuses on the proposed activity of clearance of vegetation.

Impact 1: Loss of Indigenous and / or Natural vegetation and habitat fragmentation.

Site clearance and destruction of vegetation habitat leading to an increase in habitat loss.

Impact rating before mitigation:

Impact	Severity	Duration	Extent	Consequence (S + D + E / 3)	Frequency	Probability	Likelihood (F + P / 2)	Significance (C*L)
Impact on Vegetation of Egoli Granite Grassland if it was present	5	5	2	4	5	5	5	20 **High**
The study site is entirely transformed. No vegetation of the Egoli Granite Grassland is present on site.								

Mitigation measures for Impact on Natural vegetation:

- Unnecessary further impacts on the Egoli Granite Grassland on adjacent properties should be avoided.

Impact rating after mitigation:

Impact	Severity	Duration	Extent	Consequence (S + D + E / 3)	Frequency	Probability	Likelihood (F + P / 2)	Significance (C*L)
Impact on Vegetation of the Egoli Granite Grassland	4	4	2	3	4	1	2.5	7.5 **Low**

Impact 2: Establishment and spread of declared weeds and alien invader plants.

Clarence of vegetation will lead to the establishment of pioneer species and alien and invasive plant species. This is already evident on site as alien invasive plants are abundantly spread all over the site.

Impact rating before mitigation:

Impact	Severity	Duration	Extent	Consequence (S + D + E / 3)	Frequency	Probability	Likelihood (F + P / 2)	Significance (C*L)
Establishment and spread of declared weeds and alien invader plants.	5	5	2	4	5	5	5	20 **High**
Almost 60% of plant species present on site is Alien Invasive plant species. These must be controlled and managed appropriately. The adjacent property to the west is a clear example of what would happen if alien invasive plants are left uncontrolled.								

Mitigation measures for establishment and spread of declared weeds and alien invader plants:

- Stockpiles must be controlled to avoid the development of a soil seed bank of alien plants within the stock-piled soil.
- Any alien plants must be immediately controlled.
- The river bank must be cleaned in accordance with a maintenance plan and cleared from Alien invasive species such as black wattles and eucalyptus trees.
- An on-going monitoring programme should be implemented to detect and quantify any aliens that may become established and provide information for the management of aliens.

Impact rating after mitigation:

Impact	Severity	Duration	Extent	Consequence (S + D + E / 3)	Frequency	Probability	Likelihood (F + P / 2)	Significance (C*L)
Establishment and spread of declared weeds and alien invader plants	4	4	2	3	4	1	2.5	7.5 **Low**

4.11 Assessment of Alternatives

4.11.1 Location Alternative

No alternative sites were considered. No alternative sites were suggested based on the terrain characteristics and sensitivities. The proposed site is fully transformed and does not contain any natural vegetation.

5 CONCLUSIONS

The applicant wishes to establish a restaurant and offices on the identified study area. The project included a terrestrial biodiversity assessment on Portion 243 of the farm Roodekrans 183-IQ. The property was surrounded with a wall and contains various dwellings and gardens. The property is located within a residential Estate. Regional data indicates that the site is located within the Egoli Granite Grassland vegetation type which is considered Critically Endangered in terms of the 2021 Red List of Ecosystem, published by SANBI. GDARD Conservation plan (C Plan 3.3) indicated that a third of the western side of the site falls within an area considered as “irreplaceable area” and a small part in “Ecological Support Area.

A site visit was conducted on 20 July 2024. The site characteristics confirmed that the entire site was transformed, and that the area designated as “Irreplaceable area” by C Plan 3.3 was subjected to dumping and the area closer to the river was overgrown with black wattles and did not contain any indigenous vegetation. The Site Ecological Importance (SEI) was calculated using the methods developed in the Species Environmental Assessment Guidelines of 2022 (Version 2.1). The SEI indicated that most of the site had a Very Low Site Ecological Importance with a medium SEI for the riverbanks. This was done to preserve the corridors offered by the riparian system. It must be stated that exotic plants have overgrown the river system and that these alien invasive plants hinder the survival of indigenous plant species.

Two impacts were identified in the Impact Assessment section in 4.10 above. All impacts could be mitigated to a Low sensitivity with the implementation of the suggested mitigation measures.

There were no plants of Special Conservation Concern recorded on site and the field data corresponds with the data received from the DFFE screening tool which indicated a Low sensitivity for SCC plants. Eight plant species was identified on and around the site that is listed in the Alien and Invasive Species. These plants need to be controlled in accordance with the NEMBA Act. The specialist study concluded that the development would have a Low impact on the vegetation type of the Egoli Granite Grassland as there are no indigenous vegetation left on site. The area identified as irreplaceable area by C Plan 3.3 is currently rubbish dump and areas closer to the river is overgrown with alien invasive plants.

It is the opinion of the specialist that the development could be allowed to continue as the site is isolated from other parts of vegetation and has been degraded. It is recommended that the department allows the activity and in addition allows for the clean-up of the river vegetation, and the rubbish dump site.

6 RECOMMENDATIONS

The following recommendations are made with regards to the proposed development:

Impacts on natural vegetation:

(i) Unnecessary further impacts on the Egoli Granite Grassland vegetation of adjacent properties should be avoided.

Impacts of Alien Invasive Plants

(ii) Stockpiles must be controlled to avoid the development of a soil seed bank of alien plants within the stock-piled soil.

(iii) Any alien plants must be immediately controlled.

(iv) The river area must be cleaned up and the wattle removed.

(v) Ensure that the stand of *Datura stamonium* on the adjacent property to the west of the site is contained and not allowed to spread to the subject property.

(vi) An on-going monitoring programme should be implemented to detect and quantify any aliens that may become established and provide information for the management of aliens.

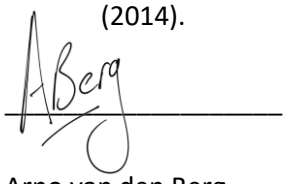
7. SPECIALIST STATEMENT

The impact assessment indicated that most impacts can be reduced to Low if mitigation measures are implemented. The site Ecological importance was rated as Very Low for transformed areas and Medium for areas associated with the riverbank.

The site ecological importance for terrestrial biodiversity was compared to the site development plan proposed for the property. In my view, the development should **be allowed to continue** as there will be no impact on indigenous vegetation or plant species. This is due to the disturbed and transformed state of the vegetation on site. The site is further isolated due to a precast wall and various land uses such as houses and workshops on site. It is suggested that the river be cleaned of wattle stands and that it should be kept open to ensure it serves as an ecological corridor.

I, Arno van den Berg, as the appointed terrestrial biodiversity and plant specialist, hereby declare/affirm the correctness of the information provided in this study and confirm that I:

- meet the general requirements to be independent and
- have no business, financial, personal, or other interest in the proposed development and that no circumstances have occurred that may have compromised my objectivity; and
- am aware that a false declaration is an offence in terms of regulation 48 of the EIA Regulations (2014).



Arno van den Berg

SACNASP Reg. No. 400036/15
M. Sc. Environmental Management
B. Sc Hons. Botanical sciences

19 September 2024

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