

Ecological Management Services Ecological Management Services

BIODIVERSITY ASSESSMENT REPORT FOR THE PROPOSED PIVOT DEVELOPMENT ON MIDDLEPLAATS NORTHERN CAPE

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For
EIMS

August 2025

DECLARATION OF CONSULTANT

I Natalie Birch declare that I –

- ☐ act as the independent specialist in this study;
- ☐ do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations 2014 amended, 2017;
- ☐ do not have and will not have any vested interest in the activity proceeding;
- ☐ have no, and will not engage in, conflicting interests in the undertaking of the activity;
- ☐ undertake to disclose, to the competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations 2014 amended 2017;
- ☐ will provide the competent authority with access to all information at my disposal regarding the study.



Natalie Birch Pr. Sci. Nat 400117/05

August 2025

CONTENTS

1. INTRODUCTION	4
1.1. TERMS OF REFERENCE & SCOPE OF WORK	4
1.2. DATA SOURCING AND REVIEW	4
1.3. LIMITATIONS AND ASSUMPTIONS	7
1.4. CONSULTATIONS	8
2. REGULATORY AND LEGISLATIVE OVERVIEW	8
3. METHODOLOGY	11
4. DESCRIPTION OF THE AFFECTED ENVIRONMENT	13
4.1. BROAD-SCALE VEGETATION PATTERNS	13
4.2. PLANT COMMUNITY DESCRIPTION	14
4.3. POPULATIONS OF SENSITIVE AND/OR THREATENED SPECIES	15
4.4. BROADSCALE TERRESTRIAL & AQUATIC PROCESSES	21
4.4. ALIEN/INVASIVE SPECIES	22
5. SITE SENSITIVITY	23
6. POTENTIAL IMPACTS	29
7. RECOMMENDATIONS AND CONCLUSION	34
8. REFERENCES	35
APPENDIX 1	37
SPECIES LISTS	37
APPENDIX 2	40
REGIONAL CONSERVATION PLANNING	40
APPENDIX 3	45
DETAILS OF SPECIALIST	45
APPENDIX 4	48
CA COMMENTS	48
APPENDIX 5	55
IMPACT ASSESSMENT METHODOLOGY	55
LIST OF FIGURES	
Figure 1 The location of the Farm Middle Plaats	13
Figure 2 Examples of the vegetation that occur within the proposed development area	15
Figure 3 Site sensitivity map with proposed pivot layout	26
Figure 4 Proposed pivot layout reshuffle to reduce impact on protected trees	27
Figure 5 Proposed alternative layout option	28
LIST OF TABLES	
Table 1 : Potential and recorded Protected Plant species on site	15
Table 2 : Results from density survey for protected tree species	17
Table 3 : Protected Reptile species	18
Table 4 : Protected Amphibians	18
Table 5 : Bird species of conservation concern identified as occurring in and around the quarter degree squares and the potential for occurrence on the site	19
Table 6 : Mammal species of conservation concern identified as occurring in and around the quarter degree squares and the potential for occurrence on the site	20
Table 7 : Alien invasive species recorded in and around the property	23

1. INTRODUCTION

Genade Boerdery wishes to create 8 new pivots for the cultivation of potatoes. The development of these pivots will occur in phases over the course of 5 years. The crops will be rotated to prevent blight and allow for conservation of the soil. Once the planting cycle for a pivot area is completed, the area will be reseeded with grazing grasses for cattle. Seven of the new cultivation areas will each cover 60 hectares and one will cover 50 hectares, resulting in a total of ~470 hectares of indigenous vegetation clearance by the end of the five year period.

An EIA process is required for this development, part of this process requires that a specialist biodiversity assessment of the site is undertaken. This report comprises the specialist biodiversity assessment for the site

The report was compiled by Dr N.V. Birch Pr. Sci Nat. (reg no 400117/05). Details of the specialist are attached in Appendix 3.

1.1. TERMS OF REFERENCE & SCOPE OF WORK

The scope of work for this Biodiversity Assessment study includes

- ☐ Review available information and documentation relating to the proposed development;
- ☐ A comprehensive investigation to identify potential floral species of special concern, this includes all IUCN listed species, TOPS listed species and species listed in schedule 1 and 2 of the NCNCA. These will be identified through the SANBI POSA database as well as other available literature and confirmed on site.
- ☐ A single field survey and literature review of the property to determine vegetation type and distribution. The survey will be undertaken to identify potential floral species of special concern.
- ☐ A single field survey and literature review to determine what red data faunal species could potentially occur within the study site. The habitat requirements of each red data species that could potentially occur on-site will be compared with the vegetation description. No onsite trapping of faunal species will be undertaken.
- ☐ Once the overall potential for occurrence of each red data species has been identified, each habitat type (based on the vegetation description and any factors identified as relevant to fauna) will be ranked in terms of conservation importance, as well as ecological sensitivity.
- ☐ The sites importance in terms of regional sensitivity will also be assessed
- ☐ The report and survey will comply with the assessment protocols.

1.2. DATA SOURCING AND REVIEW

The data sources consulted and used where necessary in the study includes the following;

Vegetation:

- Vegetation types and their conservation status were extracted from the South African National Vegetation Map (South African National Biodiversity Institute, 2006-2018)).
- Information on plant species recorded for the Quarter Degree Squares (QDS), was extracted from the POSA database hosted by SANBI. This is a much larger extent than the study area, but the data was extracted from a larger area to account for the fact that the area has probably not been well sampled in the past.
- The IUCN conservation status of the species in the list (Table 1.1) was also extracted from the database and is based on the Threatened Species Programme, Red List of South African Plants (2020).
- Threatened Ecosystem data was extracted from the NBA Threat Status and Protection Level list (SANBI 2018).
- Freshwater and wetland information was extracted from the National Freshwater Ecosystem Priority Areas assessment, NFEPA (Nel et al. 2011).
- Important catchments and protected areas expansion areas were extracted from the National Protected Areas Expansion Strategy 2016 (NPAES).

Fauna

- Lists of mammals, reptiles and amphibians which are likely to occur at the site were derived based on distribution records from the literature and various spatial databases (ADU Atlas, and BGIS databases).
- Literature consulted includes Branch (1988) and Alexander and Marais (2007) *Bates et al.* (2014) for reptiles, Du Preez and Carruthers (2009) for amphibians, Friedmann and Daly (2004) and Skinner and Chimimba (2005) for mammals.
- Bird species lists for the area were extracted from the SABAP 1 and SABAP 2 databases and Birdlife South Africa's Important Bird Areas was also consulted to ascertain if the site falls within the range of any range-restricted or globally threatened species.
- The faunal species lists provided are based on species which are known to occur in the broad geographical area, as well as a preliminary assessment of the availability and quality of suitable habitat at the site. For each species, the likelihood that it occurs at the site was rated according to the following scale:
 - **Low:** The available habitat does not appear to be suitable for the species and it is unlikely that the species occurs at the site.
 - **Medium:** The habitat is broadly suitable or marginal and the species may occur at the site.
 - **High:** There is an abundance of suitable habitat at the site and it is highly probable that the species occurs there.
 - **Definite:** Species that were directly or indirectly (scat, characteristic diggings, burrows etc.) observed at the site.
- The conservation status of each species is also listed, based on the IUCN Red List Categories and Criteria version 3.1 (2021-1) (See Table 1.1) and where species have not been assessed under these criteria, the CITES status is reported where possible. These lists are adequate for mammals and amphibians, the majority of which have been assessed, however the majority of reptiles have not been assessed and therefore, it is not adequate to assess the potential impact of the

development on reptiles, based on those with a listed conservation status alone. In order to address this shortcoming, the distribution of reptiles was also taken into account such that any narrow endemics or species with highly specialized habitat requirements occurring at the site were noted.

Table 1. The IUCN Red List Categories for fauna and flora. Species that fall within the categories in red and orange below are of conservation concern.

IUCN Red List Category

Critically Endangered (CR)

Endangered (EN)

Vulnerable (VU)

Near Threatened (NT)

Critically Rare

Rare

Declining

Data Deficient - Insufficient Information (DDD)

Data Deficient - Taxonomically Problematic (DDT)

Least Concern

The report layout is as follows in accordance to the assessment protocols 2020

Section	Requirements/Protocol	Position in Report
1	A specialist report prepared in terms of these Regulations must contain—	
(a)	Details of -	
	(i) the specialist who prepared the report; and	Cover page
	(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	Appendix 3
(b)	a declaration that the person is independent in a form as may be specified by the competent authority;	Page 2
(c)	an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.1
(d)	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment; an indication of the quality and age of base data used for the specialist report; a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change	Section 1.3 & 3 Section 1.3 & 3 Section 6

(e)	a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 1.2 & 3
(f)	Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 4 and Section 5
(g)	an identification of any areas to be avoided, including buffers;	Section 5
(h)	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitive of the site including areas to be avoided, including buffers;	Section 5
(i)	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.3
(j)	a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 6 and 7
(k)	any mitigation measures for inclusion in the EMPr;	Section 7
(l)	any conditions for inclusion in the environmental authorization;	Section 7
(m)	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 6 & 7
(n)	a reasoned opinion- <ul style="list-style-type: none"> (i) whether the proposed activity, activities or portions thereof should be authorized; (ii) regarding the acceptability of the proposed activity or activities; and (iii) if the opinion is that the proposed activity of portion thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan; 	Section 7
(o)	a description of any consultation process that was undertaken during the course of preparing the specialist report;	Section 1.4
(p)	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Appendix 4
(q)	any other information requested by the competent authority.	N/A at this stage

1.3. LIMITATIONS AND ASSUMPTIONS

The major potential limitation associated with the sampling approach is the narrow temporal window of sampling. Ideally, a site should be visited several times during different seasons to ensure a

comprehensive database of plant and animal species are captured. However, this is rarely possible due to time and cost constraints and therefore these surveys usually represent a "moment in time" survey. The survey represents the summer/wet season survey as it was conducted in February. A plant species list was compiled for the site from the site visit, this was augmented by a list of species which are known from other studies to occur in the broad vicinity of the site. The lists of amphibians, reptiles and mammals for the site are based on those observed at the site as well as those likely to occur in the area based on their distribution and habitat preferences. This represents a sufficiently conservative and cautious approach that takes account of the study limitations. Protected tree species which are of concern within this area are easily accounted for as they are highly visible and timing of the survey does not influence the accuracy of their records.

1.4. CONSULTATIONS

Comments were received from DFFE: Directorate: Forest Resource Protection (NC), stating that there were concerns about the proposed development which may have significant unavoidable impacts on protected trees, which provide habitat to critically endangered, endangered and vulnerable bird species. They requested that the protected tree species must be quantified during the EIA phase.

In addition a meeting was held on the 11 August 2025, with the EAP, the Biodiversity specialist, DFFE: Directorate: Forest Resource Protection (NC) and Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform, to discuss the number of protected trees that would be impacted as determined by the density survey as well as other layout option that would reduce the impact to the protected trees.

2. REGULATORY AND LEGISLATIVE OVERVIEW

A summary of the relevant portions of the Acts which govern the activities and potential impacts to the environment associated with the development are listed below. Provided that standard mitigation and impact avoidance measures are implemented, not all the activities listed in the Acts below would actually be triggered.

National Environmental Management Act (NEMA) (Act No 107, 1998):

NEMA requires that measures are taken that "prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development." In addition:

- ☐ That the disturbance of ecosystems and loss of biological diversity are avoided, or where they cannot be altogether avoided, are minimised and remedied;
- ☐ That a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and
- ☐ Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning

procedures, especially where they are subject to significant human resource usage and development pressure.

National Environmental Management: Biodiversity Act (NEM:BA) (Act 10 of 2004):

The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The Draft National List of Threatened Ecosystems (Notice 1477 of 2009, Government Gazette No 32689, 6 November 2009) has been gazetted for public comment. The list of threatened terrestrial ecosystems supersedes the information regarding terrestrial ecosystem status in the NSBA 2004. In terms of the EIA regulations, a basic assessment report is required for the transformation or removal of indigenous vegetation in a critically endangered or endangered ecosystem regardless of the extent of transformation that will occur. However, all of the vegetation types within and surrounding the study site are classified as Least Threatened.

NEM:BA also deals with endangered, threatened and otherwise controlled species, under the TOPS Regulations (Threatened or Protected Species Regulations). The Act provides for listing of species as threatened or protected, under one of the following categories:

- **Critically Endangered:** any indigenous species facing an extremely high risk of extinction in the wild in the immediate future.
- **Endangered:** any indigenous species facing a high risk of extinction in the wild in the near future, although it is not a critically endangered species.
- **Vulnerable:** any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future; although it is not a critically endangered species or an endangered species.
- **Protected species:** any species which is of such high conservation value or national importance that it requires national protection. Species listed in this category include, among others, species listed in terms of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

A TOPS permit is required for any activities involving any TOPS listed species.

National Forests Act (No. 84 of 1998):

The National Forests Act provides for the protection of forests as well as specific tree species, quoting directly from the Act: *"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 license or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated"*. A permit is required for the destruction or transplant or transport of any protected tree species.

National Veld and Forest Fire Act (Act No. 101 of 1998)

The purpose of this Act is to prevent and combat veld, forest and mountain fires. The Act provides for a variety of institutions, methods and practices for achieving the purpose such as the formation of fire protection associations. It also places responsibility on landowners to develop and maintain firebreaks as well as be sufficiently prepared to combat veld fires in terms of equipment as well as suitably trained personnel.

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

The Conservation of Agricultural Resources Act provides for the regulation of control over the utilisation of the natural agricultural resources in order to promote the conservation of soil, water and vegetation and provides for combating weeds and invader plant species. The Conservation of Agricultural Resources Act defines different categories of alien plants and those listed under Category 1 are prohibited and must be controlled while those listed under Category 2 must be grown within a demarcated area under permit. Category 3 plants includes ornamental plants that may no longer be planted but existing plants may remain provided that all reasonable steps are taken to prevent the spreading thereof, except within the floodline of water courses and wetlands.

Northern Cape Nature Conservation Act, No. 9 of 2009: (NCNCA)

The Northern Cape Nature Conservation Act provides inter alia for the sustainable utilisation of wild animals, aquatic biota and plants as well as permitting and trade regulations regarding wild fauna and flora within the province. In terms of this act the following section may be relevant with regards to any security fencing the development may require.

Manipulation of boundary fences 19. No Person may –

(a) erect, alter remove or partly remove or cause to be erected, altered removed or partly removed, any fence, whether on a common boundary or on such person's own property, in such a manner that any wild animal which as a result thereof gains access or may gain access to the property or a camp on the property, cannot escape or is likely not to be able to escape therefrom;

The Act also lists protected fauna and flora under 3 schedules ranging from Endangered (Schedule 1), protected (schedule 2) to common (schedule 3). The majority of mammals, reptiles and amphibians are listed under Schedule 2, except for listed species which are under Schedule 1. A permit is required for any activities which involve species listed under schedule 1 or 2. A permit obtainable from the DAERL permit office in Kimberly would be required for the site clearing. A permit would also be required to destroy or translocate any nationally or provincially listed species from the site. A single permit, which covers all of these permitting requirements as well as meets TOPS regulations, is used.

3. METHODOLOGY

A site survey, was undertaken on 12 February 2025 and a tree density count was undertaken in July 2025. During the site visit, the different biodiversity features, habitat, vegetation and landscape units present at the site were identified and mapped in the field. Walk-through-surveys were conducted across the site and all plant and animal species observed were recorded. Active searches for reptiles and amphibians were also conducted within habitats likely to harbor or be important for such species. The presence of sensitive habitats such as wetlands or pans and unique edaphic environments such as rocky outcrops or quartz patches were noted in the field if present and recorded on a GPS and mapped onto satellite imagery of the site.

Flora

Satellite images were used to identify homogenous vegetation/habitat units within the study area. These were then sampled on the ground with the aid of a GPS to navigate in order to characterise the species composition. The following quantitative data was collected:

- ☐ species composition,
- ☐ cover estimation of each species according to the Braun-Blanquet scale,
- ☐ vegetation height,
- ☐ amount of bare soil and rock cover,
- ☐ slope, aspect
- ☐ presence of biotic disturbances, e.g. grazing, animal burrows, etc.

Additional checklists of plant species were compiled by traversing a linear route and recording species as they were encountered. Searches for listed and protected plant species at the site were conducted and all listed plant species observed were recorded.

Tree Density

As protected tree species were recorded during the site survey an additional tree density count was undertaken in order to quantify the number of protected trees that would be affected by the planned development. Given that the area was not uniform in terms of the tree density, the Point-Centered Quarter (PCQ) Method was employed to estimate tree density. However, a number of belt transects were also sampled across the property to provide additional information with respect to species richness and density.

Fauna

The faunal study was undertaken as a desktop / literature survey combined with a field survey. The tasks included in each are given below.

Desktop/literature survey:

A desktop survey was undertaken to determine the red data reptile, amphibian, mammalian and bird species occurring in the quarter degree square in which the study area falls. The likelihood of red data species occurring on-site has been determined using the i) distribution maps in reference books and ii) a comparison of the habitat described from the field survey.

Field survey:

The habitats on-site were assessed to compare with habitat requirements of red data species determined during the literature survey. During the site visit the presence and identification of bird and mammal species was determined using the following methods / techniques:

- ☐ Identification by visual observation.
- ☐ Identification of bird and mammal calls.
- ☐ Identification of spoor.
- ☐ Identification of faeces.
- ☐ Presence of burrows and / or nests.

Criteria used in the assessment of impacts

The methodology used in the assessment of the identified impacts is provided in appendix 5

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The property under application is described as Middel Plaats South No. 104. It is located approximately 40km North east of Douglas and 10km south of Schmidtsdriif within the Sol Plaatje Local Municipality and the Francis Baard District.

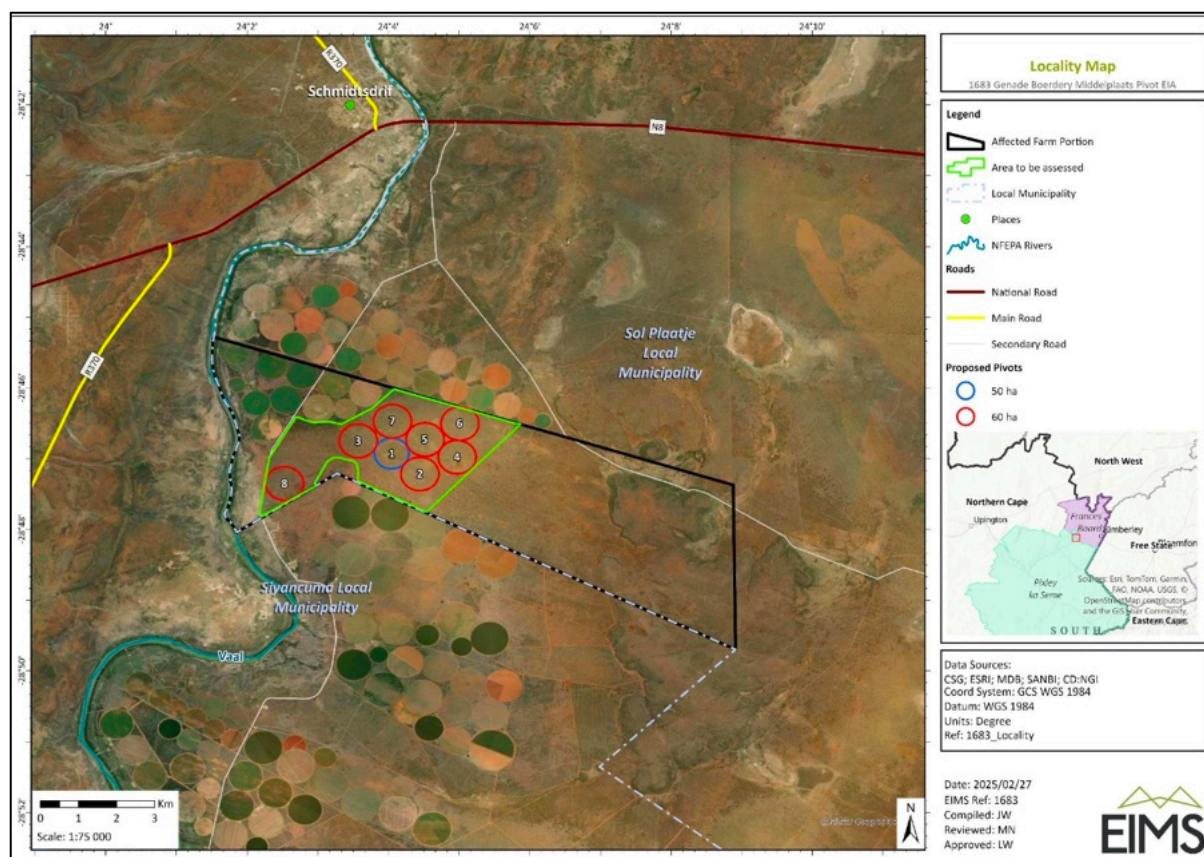


Figure 1 The location of the Farm Middle Plaats

4.1. BROAD-SCALE VEGETATION PATTERNS

The vegetation within the study area is classified as Kimberley Thornveld Vegetation (Mucina & Rutherford 2006, VegMap 2018)

Kimberley Thornveld is described as having a well developed tree layer with *Vachellia erioloba*, *Vachellia tortilis* and *V. karroo* and *Boscia albitrunca*. The shrub layer is also described as well developed with occasional dense stands of *T. camphoratus* and *S. mellifera*. The grass layer is open with a lot of uncovered soil.

4.2. PLANT COMMUNITY DESCRIPTION

Vegetation within this proposed development area is relatively homogenous in terms of species composition. There is a slight variation in density of the trees across the area which results in patches of open grassland with this savannah. The vegetation associated with the rocky outcrops "koppies" is the only area where the vegetation changes with any significance. Prior to the purchase of the property by Genade Boerdery the property was utilized for extensive cattle grazing, and was quite heavily grazed, with the vegetation exhibiting a moderately poor condition.

Mixed *Vachellia* Savannah

This vegetation community contains a tree layer which is mainly comprised of *Vachellia erioloba* and *Vachellia tortilis*. Three vegetation strata are evident within this vegetation unit. There is a prominent tree layer between 2.5m – 5m, a shrub layer, between 1.5m – 2.5m and a grass layer with an average height of 50cm. *Vachellia erioloba*, and *Vachellia tortilis* are prominent within this vegetation type however *Ziziphus muconata*, *Vachellia haematoxylon*, *Vachellia karroo*, *Boscia albitrunca* and *Grewia flava* also occur. The density of the trees varies across the landscape, with some areas forming a more open savannah, while other areas have dense pockets of trees and shrubs. Other species recorded included, *Asparagus glaucus*, *Zygophyllum lichtensteinianum*, *Lycium hirsutum*, *Helichrysum arenicola*, *Selago multispicata*, and *Melhanie rehmannii*. Grass species within this vegetation community included, *Eragrostis lehmanniana*, *Schmidtia pappophoroides*, *Aristida congesta*, *Centropodia glauca*, *Enneapogon scoparius*, *Stipagrostis hirtigluma* *Stipagrostis uniplumis*, and *Tricholaena monachne*

***Vachellia erioloba* woodland**

This vegetation type occurs in the northwestern section of the property. It is distinguished from the Mixed *Vachellia* Savanna by the high density of *Vachellia erioloba*, which dominates the woody species composition within the area and the grass sward is dominated by *Schmidtia pappophoroides*. The existing pivots occur within this vegetation type and only a small intact area of this vegetation remains along the edge of these pivots.

Grasslands

Open grasslands occur within the study area. The height of the grass sward varies depending on the level of utilisation but averages between 50-70cm tall, the percentage coverage in most of the grassland is good between 75% and 85%. Prominent grass species include, *Eragrostis lehmanniana*, *Stipagrostis uniplumis*, *Aristida congesta*, *Eragrostis curvula*, *Eragrostis obtuse*, *Fingerhuthia Africana*, *Eragrostis superba*, *Stipagrostis obtuse* and *Schmidtia pappophoroides*.

***Senegalia mellifera* scrub.**

This vegetation type is associated with the rocky outcrops which occur in the area. The vegetation is dominated by *Senegalia mellifera* although shrubs such as *Ehretia rigida*, *Gymnosporia buxifolia* *Tarchonanthus camphoratus*, and *Grewia flava* were recorded.



Figure 2 Examples of the vegetation that occur within the proposed development area

In terms of the Environmental Screening Tool, the site is considered to be of low sensitivity. There are no identified FEPA wetlands within the development site or situated within 500m of the development site. The Vaal river is situated to the west of the study site which is bordered by a gravel road. The closest point of the river is about 1km from the road. No wetlands or drainage lines were encountered within the proposed development footprint or in the immediate surrounds of the study site. The site does not fall within an identified River FEPA, or an important fish support area or an Upstream management area, and thus can be considered to be of low sensitivity in terms of aquatic biodiversity.

4.3. POPULATIONS OF SENSITIVE AND/OR THREATENED SPECIES

FLORA

Historical records of Red List plant species were consulted in order to determine the likelihood of any such species occurring in the study area and these were searched for in the field. Plant species observed as well as a list of threatened plant species previously recorded in the quarter degree grids in which the study area is situated which was obtained from the South African National Biodiversity Institute, are listed in the table below

Table 1 : Potential and recorded Protected Plant species on site

Species	Legislation	Conservation status	Potential of occurrence on site
<i>Vachellia erioloba</i>	National Forests Act 1998	Protected	Recorded on property and within development footprint
<i>Vachellia haematoxylon</i>	National Forests Act 1998	Protected	Recorded on property and within development footprint
<i>Bosica albitrunca</i>	National Forests Act 1998 NCNCA	Protected Schedule 2	Recorded in the area and within development footprint

<i>Titanopsis calcarea</i>	NCNCA	Schedule 2	Not recorded during field survey, Low potential of occurrence within development footprint
<i>Plinthus karoocicus</i>	NCNCA	Schedule 2	Not recorded during field survey, Low potential of occurrence within development footprint
<i>Ruschia ruralis</i>	NCNCA	Schedule 2	Not recorded during field survey, Low potential of occurrence within development footprint
<i>Bulbine abyssinica</i>	NCNCA	Schedule 2	Not recorded during field survey, Moderate potential of occurrence within development footprint
<i>Aloe claviflora</i>	NCNCA	Schedule 2	Not recorded during field survey, Moderate potential of occurrence within development footprint
<i>Ornithogalum nanodes</i>	NCNCA	Schedule 2	Not recorded during field survey, Low potential of occurrence within development footprint
<i>Nemesia pubescens</i>	NCNCA	Schedule 2	Not recorded during field survey, Low potential of occurrence within development footprint
<i>Aloe grandidentata</i>	NCNCA	Schedule 2	Not recorded during survey but very high possibility of occurrence in the area

Owing to the narrow temporal window of sampling some species may not have been recorded, this however does not preclude them from occurring within the development site. It is therefore recommended that prior to clearing an additional walk through is conducted. In order to remove species listed in Schedule 1 & 2 of the NCNCA, during site clearing activities an integrated permit application will have to be made to the DAERL to obtain the required permission to remove and/or translocate these species from site. In order to remove the protected trees a license application will have to be made to the Department of Forestry.

In order to determine the number of protected trees that would be affected by the proposed development a density survey was conducted within the proposed development footprint. There is a woody plant density gradient across the study area where the woody density is greater in the western section of the property and this density declines towards the eastern border, the woody component is the least dense towards the north-eastern boundary of the property. The species composition and species richness also changes along this gradient from west to east. The area bordering the existing pivots within the western portion of the property has a much higher species density and diversity within the woody component, than compared within the species diversity in the eastern portion of the proposed development footprint. Within the western portion the woody component is comprised of species such as *Vachellia erioloba*, *Senegalia mellifera*, *Searsia* spp, *Grewia flava*, *Zizuphus mucronata* and *Lycuim* spp, the woody component within the eastern section is mostly *Vachellia erioloba* and *Vachellia haematoxylon*. The density of the woody component is also not uniform within the planned pivots. Some areas of the pivots contain much higher tree densities than other parts of the pivots. Owing

to this variation in density, applying a mean density throughout the property to determine number of trees at risk was not considered feasible. To obtain a more accurate assessment of loss of protected trees a mean density per pivot was calculated to determine number of protected trees at risk for the proposed development. The results from the density survey is shown in the table below.

Table 2: Results from density survey for protected tree species

Species	Pivot 1	Pivot 2	Pivot 3	Pivot 4	Pivot 5	Pivot 6	Pivot 7	Pivot 8	Total
<i>Vachellia erioloba</i>	215	291	429	280	168	67	273	280	2003
<i>Vachellia haematoxylon</i>		97		72	118	77			364
<i>Boscia albitrunca</i>			2						2
Total	215	388	431	352	286	144	273	280	2369

Pivot 3 had the highest number of protected trees, it also had the highest density of other woody species. The dominant woody plant within this pivot was *Grewia flava*. *Senegalia mellifera* had a similar density to that of the *Vachellia erioloba* other species such as *Ziziphus mucronata* was also a common ¹. *Vachellia haematoxylon* was only recorded in the pivots located within the north-eastern section of the property, and pivot 5 had the highest density of *Vachellia haematoxylon* trees.

Not only does the woody component change in terms of species composition and density from west to east across the property, the structure of the protected tree population also changes significantly. The tree population within the area immediately adjacent to the existing pivots and in the eastern section of pivot 3 is dominated by large single stemmed individuals over 4m tall with a stem diameter of 20 -30 cm with very few saplings recorded. In pivots 2, and 4 the population was dominated by small multi-stemmed individuals between 1-2m in height. Pivot 5 had an abundance of saplings and plants under 1m in height.

FAUNA

The property has already been disturbed by agricultural activity (existing pivots and extensive cattle grazing). The grazing pressure reduces the standing biomass and grass cover which affects the habitat suitability of certain faunal species. Disturbances that alter the natural environment have two effects namely, it may cause the loss of certain species due to the destruction of habitat. It may also cause the influx of other species previously unable to colonise an area owing to lack of suitable habitat or because they have been excluded through competition.

It was not possible to compile a complete list of species present on the property during the field survey owing to the limited time frame of the assessment. It is therefore important to note that many species that potentially occur on-site may not have been identified thus emphasis was placed on the habitat in order to determine potential occurrence of species. The potential of occurrence is also assessed for the immediate surrounding area as to establish the possibility of ecological linking corridors for certain species.

¹ It must be noted that the actual boundary of the pivots have not yet been laid out and was navigated using a GPS thus there is some margin of error within respect to recording species within the pivots. The *Boscia albitrunca* were located on the outer edge of the pivot boundary and may not necessarily need to be included in the pivot area.

Based on the bird species identified while on-site, the proposed development site hosts both grassland and bushveld bird species. The loose sandy soils which occurs over a large portion of the study site, makes these areas suitable for burrowing mammals.

Reptiles Species of Conservation Concern

No red data terrapin, tortoises, snakes or lizards were identified as occurring in the quarter degree square, based on the distribution maps available in the South African Red Data Book for reptiles (Bates *et al.* 2014) and The Southern African Reptile Conservation Assessment (SARCA). The conservation status was cross checked on the IUCN website to determine most recent status listing for these species. There are however some species of reptiles that may occur in the area that are protected in terms of the NCNCA these are listed in the table below

Table 3: Protected Reptile species

Species	Legislation	Conservation status
<i>Chamaeleo dilepis</i>	NCNCA	Schedule 1
<i>Psammobates tentorius</i>	NCNCA	Schedule 2
<i>Geochelone pardalis</i>	NCNCA	Schedule 2
<i>Lamprophis fuliginosus</i>	NCNCA	Schedule 2
<i>Pseudaspis cana</i>	NCNCA	Schedule 2
<i>Prosymna sundevalli</i>	NCNCA	Schedule 2

Amphibians of Conservation Concern

No red data amphibians were identified as occurring in the quarter degree squares, based on the distribution maps available in the South African Red Data Book for amphibians (Minter *et al.*, 2004) Du Preez and Carruthers (2009) and the South African Frog Atlas project. There are however some species that are protected in terms of the NCNCA that may occur in the area, these are listed in the Table 4.

Table 4: Protected Amphibians

Species	Legislation	Conservation status
<i>Xenopus laevis</i>	NCNCA	Schedule 2
<i>Bufo gariepensis</i>	NCNCA	Schedule 2
<i>Bufo gutturalis</i>	NCNCA	Schedule 2
<i>Bufo garmani</i>	NCNCA	Schedule 2
<i>Tomopterna cryptotis</i>	NCNCA	Schedule 2
<i>Rana angolensis</i>	NCNCA	Schedule 2
<i>Rana fuscigula</i>	NCNCA	Schedule 2

Birds of Conservation Concern

A list of all red data bird species occurring in the quarter degree square, was extracted from the SABAP 1 and SABAP 2 databases and Birdlife South Africa's Important Bird Areas and from the Red Data Book of Birds (Taylor *et al* 2015) with the distribution being confirmed in Roberts – Birds of Southern Africa, 7th edition (Hockey *et al.*, 2005). The IUCN 3.1. status is also presented in the table. Based on an evaluation of the habitat requirements for these red data species, the potential of these species occurring either on-site or within 500m of the property boundary is provided in Table below.

Eight red data bird species have been recorded for the quarter degree square, five have a high potential to occur on site. Most of these species will utilise the site for foraging purposes but they may not be totally dependent on the site.

Table 5: Bird species of conservation concern identified as occurring in and around the quarter degree squares and the potential for occurrence on the site

Common Name	Scientific Name	Conservation Status (*Regional, Global)	Suitable Habitat requirements ²	Potential for Occurrence On-site and surrounding area
Blue Crane	<i>Anthropoides paradiseus</i>	Near Threatened Vulnerable	Grasslands, cultivated lands Karoo scrub and edges of vleis	Very Low – Edge of distribution range, vegetation too dense
Kori Bustard	<i>Ardeotis kori</i>	Near Threatened Near Threatened	Dry thornveld grassland, arid scrub requires the cover of some trees	High – Recorded in the area Suitable habitat occurs on site
Greater Flamingo	<i>Phoenicopterus ruber</i>	Near Threatened Least Concerned	Greater Flamingos forage on open shallow eutrophic wetlands, both inland and coastal, with a preference for saline and brackish waters	Very Low - No large bodies of open water occur on the proposed development site.
Lanner Falcon	<i>Falco biarmicus</i>	Vulnerable Least Concerned	Lanner Falcons are generally a cliff nesting bird, but have adapted to using the disused nests of Black and Pied crows, situated either in trees or on power lines For foraging purposes, Lanner Falcons utilise a wide range of habitats, from semi desert to woodland, agricultural land and also occurs in cities, but appear to prefer open habitats	High – Suitable foraging habitat occurs on site
Lesser Flamingo	<i>Phoenicopterus minor</i>	Near Threatened Near Threatened	The Lesser Flamingo forages on large brackish or saline, inland and coastal waters, shallow eutrophic wetlands, salt pans and sheltered coastal lagoons This species may use water bodies more saline than those used by the Greater	Very Low - no large bodies of open water occur on the proposed development site
Secretary bird	<i>Asagittarius serpentarius</i>	Vulnerable Vulnerable	This species shows a preference for open country, mainly savannah, open woodland, grassland, dwarf shrubland, mountain slopes and	High – Suitable habitat occurs on site

² Habitat requirements determined using the following reference material: Harrison *et al.*, 1997a; Harrison *et al.*, 1997b; Hockey *et al.*, 2005

Common Name	Scientific Name	Conservation Status (*Regional, Global)	Suitable Habitat requirements ²	Potential for Occurrence On-site and surrounding area
			man-made habitats such as grazing paddocks and fallow fields	
African White backed Vulture	<i>Gyps africanus</i>	Critically endangered Critically endangered	Savannah and bushveld. Nest in tall trees (<i>Vachellia erioloba</i>).	High - No nests were recorded within the planned development area. The fact that the site is located near operating pivots reduces its suitability but does not exclude it as potential habitat
Cape Vulture	<i>Gyps coprotheres</i>	Endangered Endangered	Widespread in southern Africa where it can be found in open grasslands and woodlands, from sea level to very high mountains provided there are high cliffs to breed on. They can, however, roost on trees and pylons far away from their breeding sites.	High - Suitable habitat on the property. The fact that the site is located near operating pivots reduces its suitability but does not exclude it as potential habitat

Mammals of Conservation Concern

A list of all red data mammal species occurring in the quarter degree squares, was extrapolated from the Red Data Book for Mammals (EWT, 2004) and the MammalMAP, the Mammal Atlas of Africa database. Based on an evaluation of the habitat requirements for these red data species (EWT, 2004; Skinner and Chimimba, 2005), the potential of these species occurring either on-site or within 500m of the property boundary is provided in the table below

Table 6: Mammal species of conservation concern identified as occurring in and around the quarter degree squares and the potential for occurrence on the site

COMMON NAME	SCIENTIFIC NAME	CONSERVATION STATUS ³	SUITABLE HABITAT ON-SITE ⁴	POTENTIAL FOR OCCURRENCE ON-SITE AND SURROUNDING AREA
South African hedgehog	<i>Atelerix frontalis</i>	Near Threatened	The South African Hedgehog is a nocturnal species that has been recorded to occur in grassland, resting curled up under matted grass, in debris under the shade of bushes or in	High – Area has sufficient grassland and bushes thus suitable habitat is present.

³ Status based on listing in the National Red List of Mammals 2016

⁴ Habitat requirements determined using the following reference material: Skinner and Smithers, 1990; EWT, 2004; Skinner and Chimimba, 2005

COMMON NAME	SCIENTIFIC NAME	CONSERVATION STATUS ³	SUITABLE HABITAT ON-SITE ⁴	POTENTIAL FOR OCCURRENCE ON-SITE AND SURROUNDING AREA
			holes under the ground	
Brown hyaena	<i>Hyaena brunnea</i>	Near Threatened	They occur in semi-desert scrub, open scrub and open woodland savannah. As they are nocturnal, cover in which to lie in during the day is essential, such as dense shade or holes in the ground. This species has been reported in the general vicinity of the site, and it is possible that this species may currently visit the site as a vagrant when feeding.	Low – For the most part, the vegetation cover of the proposed development site is suitable however the substantial amount of agricultural activity and its proximity to human habitation make it unlikely that this animal will occur in the area
Spotted-necked otter	<i>Lutra maculicollis</i>	Vulnerable	Spotted-necked Otters are found in fresh water of large rivers with prominent pools, lakes, dams and well watered swamps. They occur in deeper water than the Cape Clawless Otter, but do not move far from the water margins. They are also dependent on adequate cover of dense vegetation or holes in which to hide.	Low – Although it is likely that it occurs around the river the proposed development site of the pivots is situated too far from the water margin
Black-footed Cat	<i>Felis nigripes</i>	Vulnerable	Arid and mesic savanna and scrubland, prefer rocky areas	Moderate – limited suitable habitat

4.4. BROADSCALE TERRESTRIAL & AQUATIC PROCESSES

Kimberley Thornveld is classified as Least Threatened only 4.4% of this vegetation is formerly conserved and 26.4% is considered transformed, mostly by agricultural cultivation. Threats include bush encroachment mostly by *Senegalia mellifera* owing to overgrazing, cultivation and mining.

The study area does not fall within a CBA, it is not considered a threatened ecosystem in terms of NEM:BA. The proposed development site does not fall within a River or wetland FEPA, it does not fall within or near

any Important birds' areas, nor does it fall within a strategic water resource area. It is not located within a focus area for land-based protected area expansion. It is located approximately 24 km east of the Ghaap Plateau Focus area and approximately 26 km North of the Mokala National Park primary focus area. Focus areas for land-based protected area expansion are large, intact and unfragmented areas of high importance for biodiversity representation and ecological persistence, suitable for the creation or expansion of large, protected areas. The focus areas were identified through a systematic biodiversity planning process undertaken as part of the development of the National Protected Area Expansion Strategy 2008 (NPAES). They present the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES and were designed with strong emphasis on climate change resilience and requirements for freshwater ecosystems.

The site does not contain any NFEPA wetlands or pans. It does not fall within a River FEPA or upstream management area. The site does not fall within a strategic water source area. The site is considered to have a low aquatic biodiversity sensitivity rating, as there are no aquatic biodiversity features on site, this was confirmed during site survey. The site survey was undertaken during the wet season which eases the identification of wetland systems, should they be present.

4.4. ALIEN/INVASIVE SPECIES

The Conservation of Agricultural Resources Act (CARA) regulates and restricts the propagation, harboring and sale of invasive alien plant and weed species listed in a set of Regulations published in terms of the Act. CARA was amended in 2001 and is administered by the National Department of Agriculture. In addition, the Northern Cape Nature Conservation Act (Act 9 of 2009), Chapter 7 states that no person may import, export, transport, possess or trade in an invasive species and that the owner of land upon which an invasive species is found, must take the necessary steps to eradicate or destroy such species. Schedule 6 of this Act lists a number of species classified as invasive.

The National Environmental Management: Biodiversity Act (NEMBA – Act no. 10 of 2004) regulates all invasive organisms in South Africa, including a wide range of fauna and flora. All listed IAPs are divided into four categories in accordance with the Government Gazette Notice No. 40166 of July 2016 as listed below:

□ **Category 1a (PROHIBITED): Listed Invasive Species**

A person in control of a Category 1a Listed Invasive Species must comply with the provisions of section 73(2) of the Act; immediately take steps to combat or eradicate listed invasive species in compliance with sections 75(1), (2) and (3) of the Act; and allow an authorised official from the Department to enter onto land to monitor, assist with or implement the combatting or eradication of the listed invasive species.

□ **Category 1b (PROHIBITED / Exempted if in Possession or Under control): Listed Invasive Species**

A person in control of a Category 1 b Listed Invasive Species must control the listed invasive species in compliance with sections 75(1), (2) and (3) of the Act. A person contemplated in sub-regulation (2) must allow an authorised official from the Department to enter onto the land to

monitor, assist with or implement the control of the listed invasive species, or compliance with the Invasive Species Management Programme contemplated in section 75(4) of the Act.

□ **Category 2 (PERMIT REQUIRED): Listed Invasive Species**

Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the Act as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be. A landowner on whose land a Category 2 Listed Invasive Species occurs or person in possession of a permit, must ensure that the specimens of the species do not spread outside of the land or the area specified in the Notice or permit. Unless otherwise specified in the Notice, any species listed as a Category 2 Listed Invasive Species that occurs outside the specified area contemplated in sub-regulation (1), must, for purposes of these regulations, be considered to be a Category 1 b Listed Invasive Species and must be managed according to Regulation 3. Notwithstanding the specific exemptions relating to existing plantations in respect of Listed Invasive Plant Species published in Government Gazette No. 37886, Notice 599 of 1 August 2014 (as amended), any person or organ of state must ensure that the specimens of such Listed Invasive Plant Species do not spread outside of the land over which they have control.

□ **Category 3 (PROHIBITED): Listed Invasive Species**

Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the Act, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of the Act, as specified in the Notice. Any plant species identified as a Category 3 Listed Invasive Species that occurs in riparian areas, must, for the purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to regulation 3.

Table 7: Alien invasive species recorded in and around the property

Species		Category
<i>Argemone mexicana</i>	Yellow flowered Mexican Poppy	1b
<i>Prosopis cf. glandulosa</i>	Mesquite	3
<i>Argemone ochroleuca</i>	White flowered Mexican poppy	1b
<i>Datura ferox</i>	Large thorn apple	1

5. SITE SENSITIVITY

The classification of areas into different sensitivity classes is based on information collected at various levels. This includes the national conservation status of the vegetation, the presence of species of special concern and the condition of the vegetation.

Vegetation types can be categorised according to their conservation status, which is in turn, assessed according to the degree of the transformation relative to the expected extent of each vegetation type. The status of a habitat or vegetation type is based on how much of its original area still remains intact relative to various thresholds. Sensitivity of habitats and sites within the area can be assessed using a combination of criteria as follows:

	Criterion	Definition
1	Conservation status of untransformed habitats occurring in the study area	The extent of each vegetation type occurring within the study area that is conserved and/or transformed relative to a targeted amount required for conservation
2	Presence and number of Red Data species and other species of special concern	Presence or potential presence of Red Data species within habitats
3	Within-habitat species richness of flora and the between-habitat (beta) diversity of the site	Presence or potential presence of Red Data Species within habitats.
4	The type or nature of topography of the site, ie presence of ridges koppies etc	Steepness and/or nature of topography in the study area.
5	The type and nature of important ecological processes on site, especially hydrological processes, ie wetlands drainage lines etc.	Habitats and/or terrain features that represent ecological processes such as water-flow migration routes etc.

In order to advise the impact assessment and the proposed mitigation, a sensitivity map has been generated for the property using a number of criteria. In order to quantify and detail the sensitive areas in terms of the criteria used to assess sensitivity, the site was demarcated into a number of manageable blocks. A table was created to list each of the sensitivity criteria and a value assigned to each criteria. Each block was then assessed in terms of its relative sensitivity value. This produced a quantifiable sensitivity map. The criteria used to assess the sensitivity included;

Current state of degradation	1 = (80-100% degraded), Very degraded, highly transformed 2 = (60 -79% degraded), moderately transformed 3 = (40 – 59%) degraded, some transformation 4 = (20 -39% degraded, slightly transformed 5 = (0-19%) degraded Good condition
Slope & drainage	1 = Flat 2 = Gently undulating 3 = Slight slope 4 = Slope less than 5° 5 = Slope 5° or greater
Potential for erosion	1= Low 2 = Medium 3 = High
Presence of Red Data Species	0 = No 1 = Yes

Suitable habitat for RD species	0 = No 1 = Yes
Potential habitat fragmentation	1 = Low 2 = Low – moderate 3 = Moderate 4 = Moderate - high 5 = High
Importance to biodiversity& Ecosystem Functioning	1 = Low 2 = Low – moderate 3 = Moderate 4 = Moderate - high 5 = High

Areas have been classified as follows:

- **Low (0-9)** sensitivity areas are already highly transformed and/or already contain development. Any development in these areas will not have a significant environmental impact.
- **Medium (10-20)** sensitivity areas: The vegetation and habitats in these areas have had some disturbance and may include some potential habitat for red data species or the presence of limited red data/protected species. Development in these areas, would be subject to guidelines and the mitigation measures.
- **High (21-25)** sensitivity areas included confirmed high number of red data /protected species, and ideal red data species habitat. Any development in these areas would have a significant environmental impact. No development should take place in these areas, but it is recognized that in certain exceptional cases, development may need to take place. Under these conditions very strict development guidelines would be required, and only under guarantee that similar areas within the site would be conserved thus reducing the risk of development.

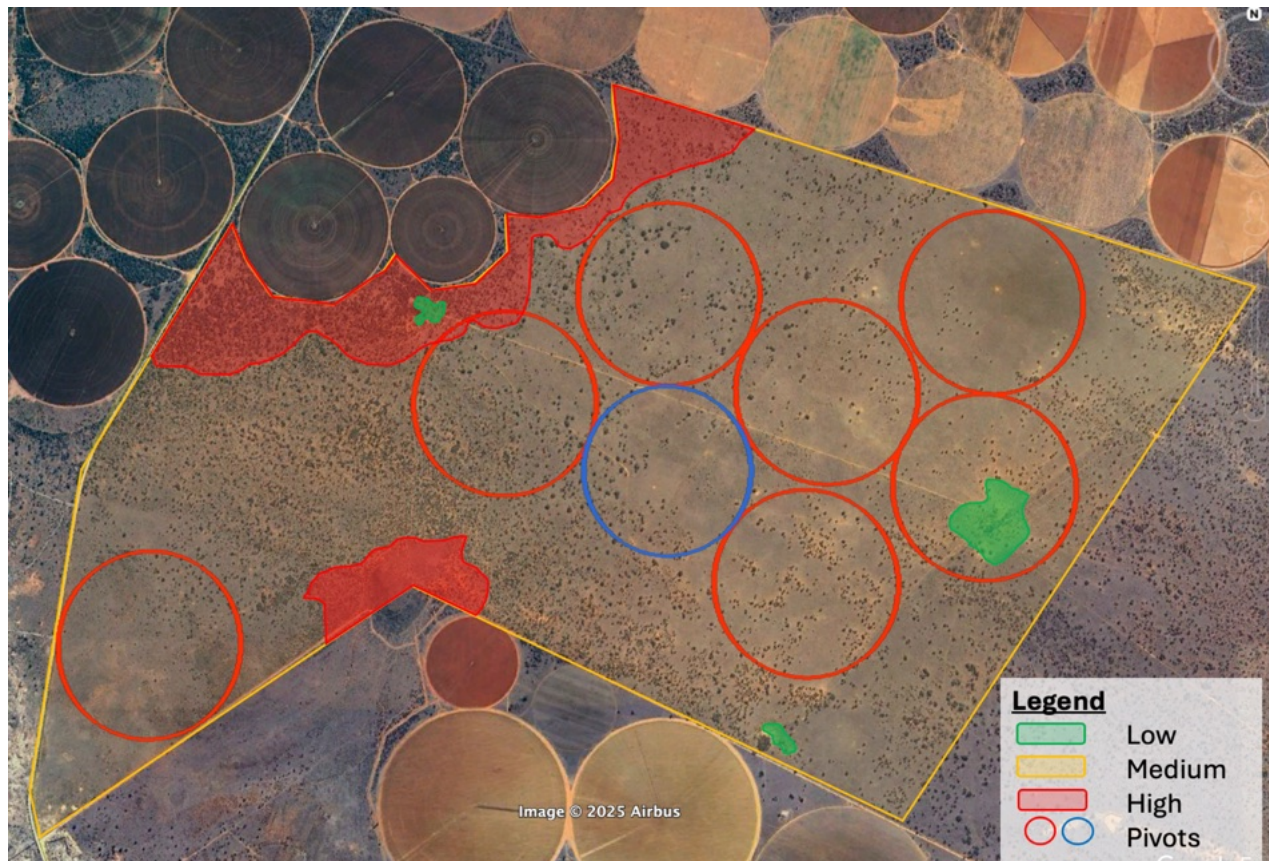


Figure 3 Site sensitivity map with proposed pivot layout

The pivots mostly fall within the moderate sensitivity areas. The high and moderate sensitivity areas contain protected trees. The area of high sensitivity surrounding the existing pivots has been demarcated owing to the size and density of the protected trees present, within this area. As one moves eastward across the property the density of the *Vachellia erioloba* drops, and the trees are much smaller. There is also a change in species composition as the species richness also decreases along this gradient. This change in density and structure would suggest that from the riverine areas the vegetation structure would naturally change from a woodland into an open savannah or grassy area as one moved further away from the river. Most of the dense woodland area has already been cleared for the existing pivots. This property has been utilized as a cattle farm, cattle enjoy eating the pods of the *Vachellia erioloba* and as the cattle moved through the areas with dense populations of these trees they would consume the pods. When they were rotated out into the further grassland camps they would have excreted the digested pods and in so doing germinated these trees. This is supported by the fact that most of the trees in the eastern section of the property are young.

Vachellia erioloba is considered a keystone species, as the trees create a unique micro-environment, influencing soil nutrient cycling, moisture retention, and provide shade, which impacts the surrounding vegetation and animal life. However, it's the large established trees that have the most impact in terms of ecosystem services and species support. For instance, the critically endangered White-back vulture only nest in larger well established Camel thorn trees. Therefore, the area containing a higher density of the larger *V. erioloba* with a higher species richness would be considered to have a higher sensitivity rating.

In order to reduce the loss of protected trees as a result of the planned development, alternative layout options should be considered to avoid areas of dense trees in order to aid in reducing the impact. The soil analysis study undertaken as part of the ploughing certificate application, indicated that suitable soils were present throughout the proposed development area, this will allow for the option of adjusting the pivot placements to avoid as many trees as possible as the soils are not a limiting factor with respect to pivot layout.

One option would be to move pivot 3 and relocate it along the northern boundary. In order to fit it in this space pivot 6 would need to move to eastwards and pivot 3 would need to be reconfigured as a half pivot. By reconfiguring the pivot layout (as per the figure below) the number of *Vachellia erioloba* lost can be reduced by 215. This option would be recommended to avoid the larger more established trees that occur in the western section of the property. However slightly more *Vachellia haematoxylon* trees would be at risk as these occur in the north eastern section of the property, this option would only result in approximately 182 (8%) fewer protected trees being removed.

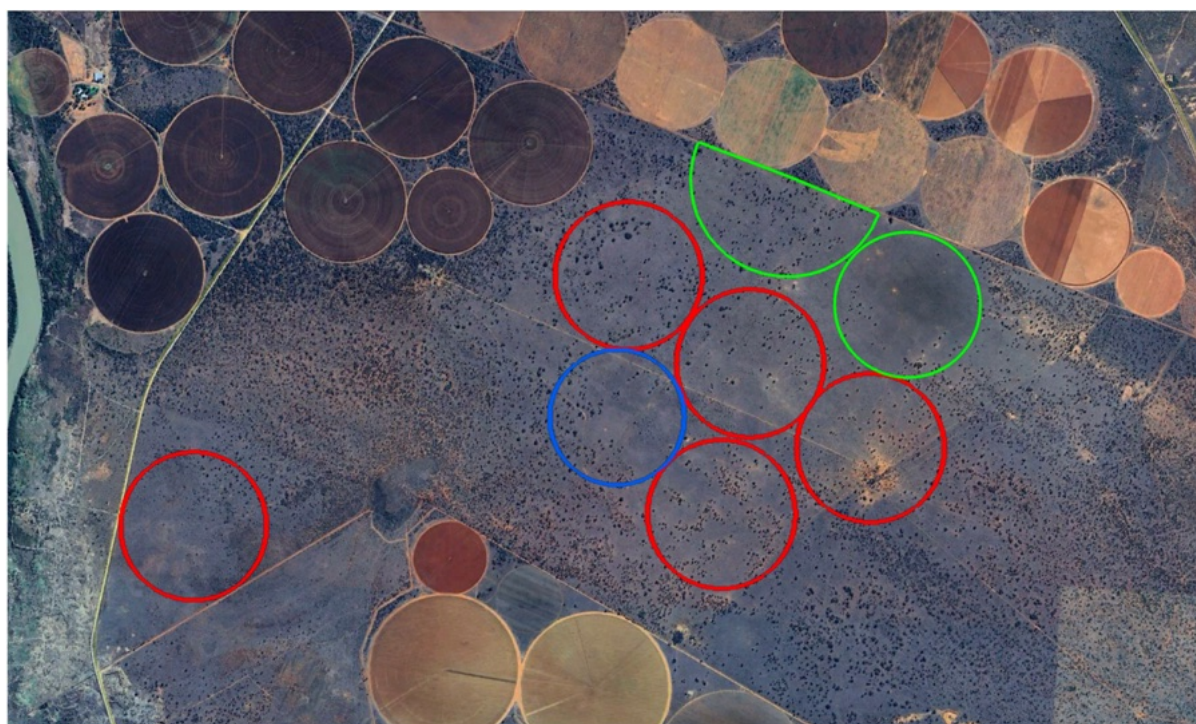


Figure 4 Proposed pivot layout reshuffle to reduce impact on protected trees.

An alternative option would be to reduce the number of pivots, which would reduce the amount of vegetation clearing and in so doing reduce the number of protected trees affected. However, there are limitations with respect to how many pivots can be lost. Potato farming has to be carried out on a cyclical bases, with the soil being rested with sufficient intervals in order to prevent disease build up, the longer the rest cycle the more sustainable the system. If the period between potato crops is too short, the system will fail and the area will no longer be suitable for potato farming, this cycle and area planted also has to be financially viable. With this in mind there is scope to reduce the number of pivots by one, for it still to be economically viable for the farmer. Under these conditions the pivot with the highest tree density should be excluded from development, thus the alternative development layout option would

be to exclude pivot 3 from development. This option would reduce the number of affected trees by 431, thus 1938 protected trees would be lost as a result of the development.



Figure 5 Proposed alternative layout option

This proposed alternative layout option will result in a broad ecological corridor being established within the proposed development area, it also excludes the small patch of high sensitive area (within pivot 3) from development. Clustering development is generally better for minimizing habitat fragmentation because it consolidates human activity into a smaller area, leaving larger, contiguous blocks of natural habitat undisturbed. This strategy supports larger patches of core habitat and connectivity, which is crucial for maintaining biodiversity, ecosystem functions, and species survival, compared to a dispersed development pattern that breaks up habitats into smaller, more isolated fragments.

6. POTENTIAL IMPACTS

Typically, a development is divided into the construction phase and the operational phase. It is during this construction phase that most of the destruction of habitat and microhabitat takes place. For this development the construction phase will be considered as the initial clearing and preparation of the land. Planting and harvesting and subsequent successional phases will be considered the operational phase. The pivots will be run on a cyclic basis so only a few of the pivots will be operational at any one time, thus the construction and operational phases will run concurrently with pivots being at different phases of the successional process and development until all the pivots have been developed.

Two layout options will be assessed in terms of potential impacts. The proposed development option as presented in Figure 1 and the reduced number of pivot option as presented in Figure 5. The layout option presented in Figure 4 will not be assessed as the number of protected trees lost with this option is not considered to be large enough to significantly change the impact to the protected trees.

1. **Habitat fragmentation, Loss of Natural vegetation and Alien invasion**

Vegetation clearing will occur as a result of the development of irrigation pivots. This loss of natural vegetation will cause fragmentation and habitat disturbance in the landscape. The disturbance destroys primary vegetation. As primary vegetation is more functional in an ecosystem, this could irreversibly transform the vegetation characteristics and faunal populations in the area. Clearing of surface areas has the effect of creating unnatural open spaces through the vegetation and the matrix of the landscape. For the smaller species, it limits movement and restricts access to foraging sites. This results in reduced population density of prey species (invertebrates and / or smaller birds and / smaller mammals and / or herpetofauna) which then reduces the food availability for predators invertebrates and / or larger birds and / or larger mammals and / or herpetofauna). The changes in the vegetation structure also alter the availability of suitable cover for many faunal species.

There are already substantial numbers of pivots located all along the Vaal River from Douglas to Schmitsdrif, as well as a secondary gravel road that runs along the river connecting the R375 to the N8, so much of this ecosystem has already been fragmented. The layout of the pivots is such that there will be some continuous natural vegetation on the property which may assist in lessening the onsite impact of fragmentation from the pivots.

As with all disturbance, there is an increased risk of alien infestation. Many alien species proliferate in disturbance areas such as the periphery of the irrigation lands. Invasive species affect our natural biodiversity in a number of ways. They may compete directly with natural species for food or space, may compete indirectly by changing the food web or physical environment, or hybridize with indigenous species. Rare species with limited ranges and restricted habitat requirements are often particularly vulnerable to the influence of these alien invaders. Invasive plants have claimed about 8 percent or 10 million hectares of land suitable for agricultural use in South Africa. These invasive alien plants steal about seven percent of South Africa's water bulk every year.

Mitigation:

Vegetation clearing should be restricted to areas of the pivot only, the remaining sections of the property should be rested and then a constructive grazing regime implemented to manage the non-developed areas, to best support the biodiversity. Alien vegetation that has grown as a result of land clearing must be removed by approved methods

Impact Name	Habitat fragmentation, Loss of Natural vegetation and Alien invasion						
Alternative	Proposed development layout						
Phase	Construction & Operation						
Environmental Risk							
Attribute	Pre - mitigation	Post mitigation	-	Attribute	Pre - mitigation	Post mitigation	-
Nature of Impact	-1	-1		Magnitude	3	2	
Extent of Impact	2	1		Reversibility	3	3	
Duration	4	3		Probability	3	3	
Environmental Risk (pre- mitigation)						-8.25	
Environmental Risk (post-mitigation)						-6.75	
Degree of confidence in impact prediction						HIGH	
Cumulative Impacts						2	
Degree of Potential irreplaceable loss of resources						1	
Prioritisation Factor						1.13	
Final Significance (Medium - low)						-7.59	

Impact Name	Habitat fragmentation, Loss of Natural vegetation and Alien invasion				
Alternative	Alternative development layout (reduced number of pivots)				
Phase	Construction & Operation				
Environmental Risk					
Attribute	Pre - mitigation	Post mitigation	Attribute	Pre - mitigation	Post mitigation
Nature of Impact	-1	-1	Magnitude	2	2
Extent of Impact	1	1	Reversibility	3	2
Duration	4	3	Probability	2	2
Environmental Risk (pre- mitigation)					-5
Environmental Risk (post-mitigation)					-4
Degree of confidence in impact prediction					MEDIUM
Cumulative Impacts					1
Degree of Potential irreplaceable loss of resources					1
Prioritisation Factor					1.00

Final Significance (Low)**-4.00****2. Loss of Species of Conservation Concern**

The clearing of vegetation will result in the loss of some protected flora, most notably the protected trees. The cumulative impact of vegetation clearing and the subsequent loss of these trees for irrigation development in this area increases the significance of this impact as more of the vegetation type is transformed, however the development will not result in a loss of the resource from the area as these trees occur extensively in the surrounding areas. The clearing of vegetation may result in the loss of suitable habitat for RDB faunal species which would lead to these animals moving off the property into the surrounding areas. The reduction of suitable habitat from an area is always a cause for concern, and although suitable habitat may still be available it does impact on the number of these species that an area can carry.

Mitigation:

A search and rescue operation should be performed prior to clearing to rescue and relocated any species of conservation concern (other than protected trees). As it is not a feasible or practical option to rescue/relocate the protected trees, it's important to ensure that trees between the pivots remain undisturbed. Although no herbicides are used in the growing of potatoes, pesticides and fungicides are used, spot treatments of these reduce the risk of runoff and contamination of surrounding areas. A suitable management plan should be drawn up for the undeveloped areas of the property, to best support the biodiversity and maintain the integrity of the habitat within this area.

Impact Name	Loss of Species of Conservation Concern						
Alternative	Proposed development layout						
Phase	Construction						
Environmental Risk							
Attribute	Pre - mitigation	Post mitigation	-	Attribute	Pre - mitigation	Post mitigation	-
Nature of Impact	-1	-1		Magnitude	3	2	
Extent of Impact	2	1		Reversibility	3	3	
Duration	4	4		Probability	3	3	
Environmental Risk (pre- mitigation)						-9	
Environmental Risk (post-mitigation)						-7.5	
Degree of confidence in impact prediction						HIGH	
Cumulative Impacts						2	
Degree of Potential irreplaceable loss of resources						1	
Prioritisation Factor						1.13	
Final Significance (Medium-Low)						-8.44	

Impact Name	Loss of Species of Conservation Concern				
Alternative	Alternative development layout (reduced number of pivots)				
Phase	Construction				
Environmental Risk					
Attribute	Pre - mitigation	Post mitigation	Attribute	Pre - mitigation	Post mitigation
Nature of Impact	-1	-1	Magnitude	2	2
Extent of Impact	2	1	Reversibility	2	2
Duration	4	3	Probability	3	3
Environmental Risk (pre- mitigation)					-7.5
Environmental Risk (post-mitigation)					-6
Degree of confidence in impact prediction					HIGH
Cumulative Impacts					1
Degree of Potential irreplaceable loss of resources					1
Prioritisation Factor					1.00
Final Significance (Medium-Low)					-6

3. Anthropogenic Disturbances, Intentional and/or accidental killing of fauna

Anthropogenic disturbances include aspects such as, vibrations caused by machinery & vehicles. These aspects will impact on invertebrate species more than any other faunal species. These anthropogenic disturbances impact on the way invertebrates forage. For example; some invertebrates use vibrations caused by their prey to locate and catch them. Vibrations caused by construction equipment will make this impossible. Smaller fauna will inevitably be killed during land clearing activities as these activities will destroy their habitat. In addition to unintentional killing of fauna, some faunal species, particularly herpetofaunal species, are often intentionally killed as they are thought to be dangerous.

Mitigation

There is unfortunately no mitigation for the vibrations caused by machinery/vehicles, except perhaps ensuring that activities are kept to a minimum. A search and rescue can be conducted prior to clearing activities, for example animals such as tortoises should be moved out of harm's way. As the killing of herpetofauna is considered a result of ignorance, this can be ameliorated through education. The labour force involved should be educated regarding the conservation importance of herpetofauna.

Impact Name	Anthropogenic Disturbances, Intentional and/or accidental killing of fauna						
Alternative	Proposed development layout						
Phase	Construction & Operation						
Environmental Risk							
Attribute	Pre - mitigation	Post mitigation	-	Attribute	Pre - mitigation	Post mitigation	-

Nature of Impact	-1	-1	Magnitude	1	1
Extent of Impact	1	1	Reversibility	2	2
Duration	3	3	Probability	3	2
Environmental Risk (pre- mitigation)					-6
Environmental Risk (post-mitigation)					-3.5
Degree of confidence in impact prediction					MEDIUM
Cumulative Impacts					2
Degree of Potential irreplaceable loss of resources					1
Prioritisation Factor					1.13
Final Significance(Low)					-3.94

Impact Name	Anthropogenic Disturbances, Intentional and/or accidental killing of fauna						
Alternative	Alternative development layout (reduced number of pivots)						
Phase	Construction & Operation						
Environmental Risk							
Attribute	Pre - mitigation	Post mitigation	-	Attribute	Pre - mitigation	Post mitigation	-
Nature of Impact	-1	-1		Magnitude	1	1	
Extent of Impact	1	1		Reversibility	2	2	
Duration	3	3		Probability	2	2	
Environmental Risk (pre- mitigation)						-4	
Environmental Risk (post-mitigation)						-3.5	
Degree of confidence in impact prediction						MEDIUM	
Cumulative Impacts						1	
Degree of Potential irreplaceable loss of resources						1	
Prioritisation Factor						1.00	
Final Significance(Low)						-3.50	

7. RECOMMENDATIONS AND CONCLUSION

The area of the proposed development consists of mostly natural vegetation. The proposed development will have an impact on the biodiversity of the area, as there will be additional fragmentation of the habitat and the loss of protected tree species. However, this loss will not result in the loss of these protected species from the area, as they are well represented in the surrounding areas.

The continued development of land adjacent to the Vaal River does mean that there is less natural vegetation in the area, nevertheless this section has not been included in the CBA of the Vaal river system in this region, probably owing to the already fragmented nature of the surrounding area from the existing pivots and gravel road.

The balance between development and protecting biodiversity hinges on sustainable practices that integrate economic growth with responsible resource use and conservation efforts, recognizing that biodiversity underpins essential ecosystem services. Planning layouts that create or maintain connected patches of habitat allows for species movement, genetic exchange, and the resilience of populations. A significant number of protect trees will be affected by this planned development. The best ground in terms of agricultural potential is unfortunately associated with the protected trees within the Kimberley Thornveld vegetation type as these trees are found on the deep red soils which are ideal for agricultural development. Two site layout options have been presented for the development, the alternative option (reduced number of pivots) will result in fewer protected trees being lost, as well as a larger ecological corridor, within an area of higher woody species diversity and larger camel thorn trees and is therefore the preferred option.

The impact of the proposed development on the terrestrial and aquatic biodiversity is considered to be medium-low to low and as such the development should be able to proceed as long as the mitigations measures are adhered to and that best practice measures for the operation are implemented. The planned development will not alter the biodiversity and habitat significantly from the status quo of the surrounding area.

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APPENDIX 1

SPECIES LISTS

PLANT SPECIES CHECK LIST

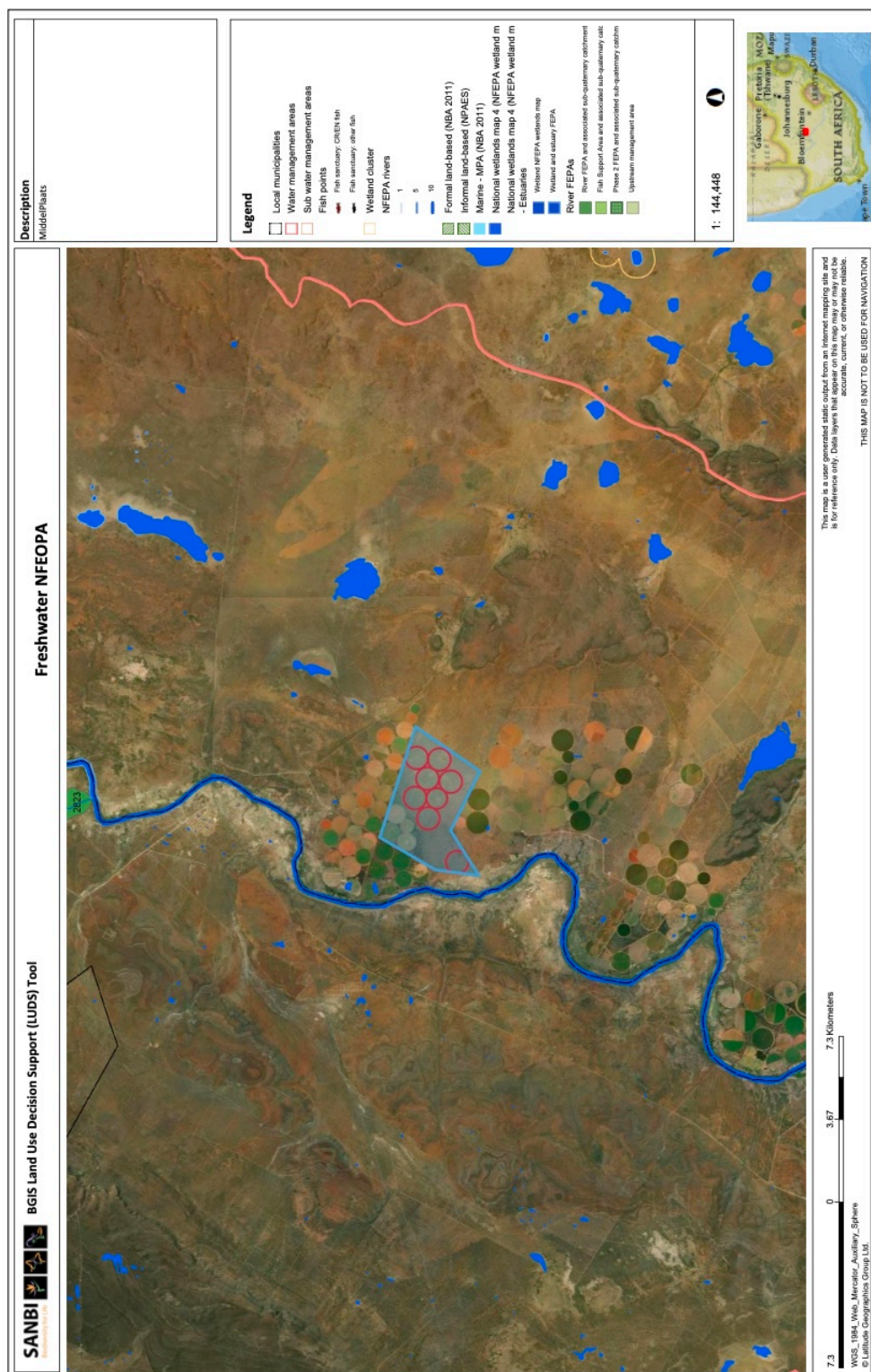
Family		Ecology	IUCN	NCNCA	Forest Act
Aizoaceae	<i>Titanopsis calcarea</i> (Marloth) Schwantes	Indigenous; Endemic	LC	Schedule 2	
Aizoaceae	<i>Ruschia</i> sp.			Schedule 2	
Aizoaceae	<i>Plinthus karoicus</i> I. Verd.	Indigenous	LC	Schedule 2	
Aizoaceae	<i>Ruschia ruralis</i> (N.E.Br.) Schwantes	Indigenous; Endemic	LC	Schedule 2	
Amaranthaceae	<i>Salsola microtricha</i> Botsch.	Indigenous; Endemic	LC		
Anacardiaceae	<i>Searsia pyroides</i> (Burch.) Moffett var. <i>gracilis</i> (Engl.) Moffett		LC		
Asparagaceae	<i>Asparagus glaucus</i> Kies	Indigenous	LC		
Asparagaceae	<i>Asparagus setaceus</i> (Kunth) Jessop		LC		
Asparagaceae	<i>Asparagus suaveolens</i> Burch.		LC		
Asphodelaceae	<i>Bulbine abyssinica</i> A.Rich.	Indigenous	LC	Schedule 2	
Asphodelaceae	<i>Aloe claviflora</i> Burch.	Indigenous	LC	Schedule 2	
Asphodelaceae	<i>Aloe granditdata</i>	Indigenous	LC	Schedule 2	
Asteraceae	<i>Chrysocoma ciliata</i> L.	Indigenous	LC		
Asteraceae	<i>Helichrysum arenicola</i> M.D.Hend.	Indigenous	LC		
Asteraceae	<i>Euryops asparagoides</i> (Licht. ex Less.) DC.	Indigenous	LC		
Asteraceae	<i>Nolletia chrysocomoides</i> (Desf.) Cass. ex Less.	Indigenous	LC		
Asteraceae	<i>Tarchonanthus camphoratus</i> L.		LC		
Brassicaceae	<i>Lepidium africanum</i> (Burm.f.) DC.	Indigenous	LC		
Brassicaceae	<i>Heliophila minima</i> (Stephens) Marais	Indigenous	LC		
Boraginaceae	<i>Ehretia rigida</i> (Thunb.) Druce subsp. <i>nervifolia</i> Retief & A.E. van Wyk		LC		
Capparaceae	<i>Boscia albitrunca</i> (Burch.) Gilg & Gilg-Ben.	Indigenous	LC	Schedule 2	Protected
Celastraceae	<i>Gymnosporia buxifolia</i> (L.) Szyszyl.				
Cleomaceae	<i>Cleome rubella</i> Burch.	Indigenous	LC		
Convolvulaceae	<i>Cuscuta appendiculata</i> Engelm.	Indigenous; Endemic	LC		
Cucurbitaceae	<i>Kedrostis crassirostrata</i> Bremek.	Indigenous	LC		

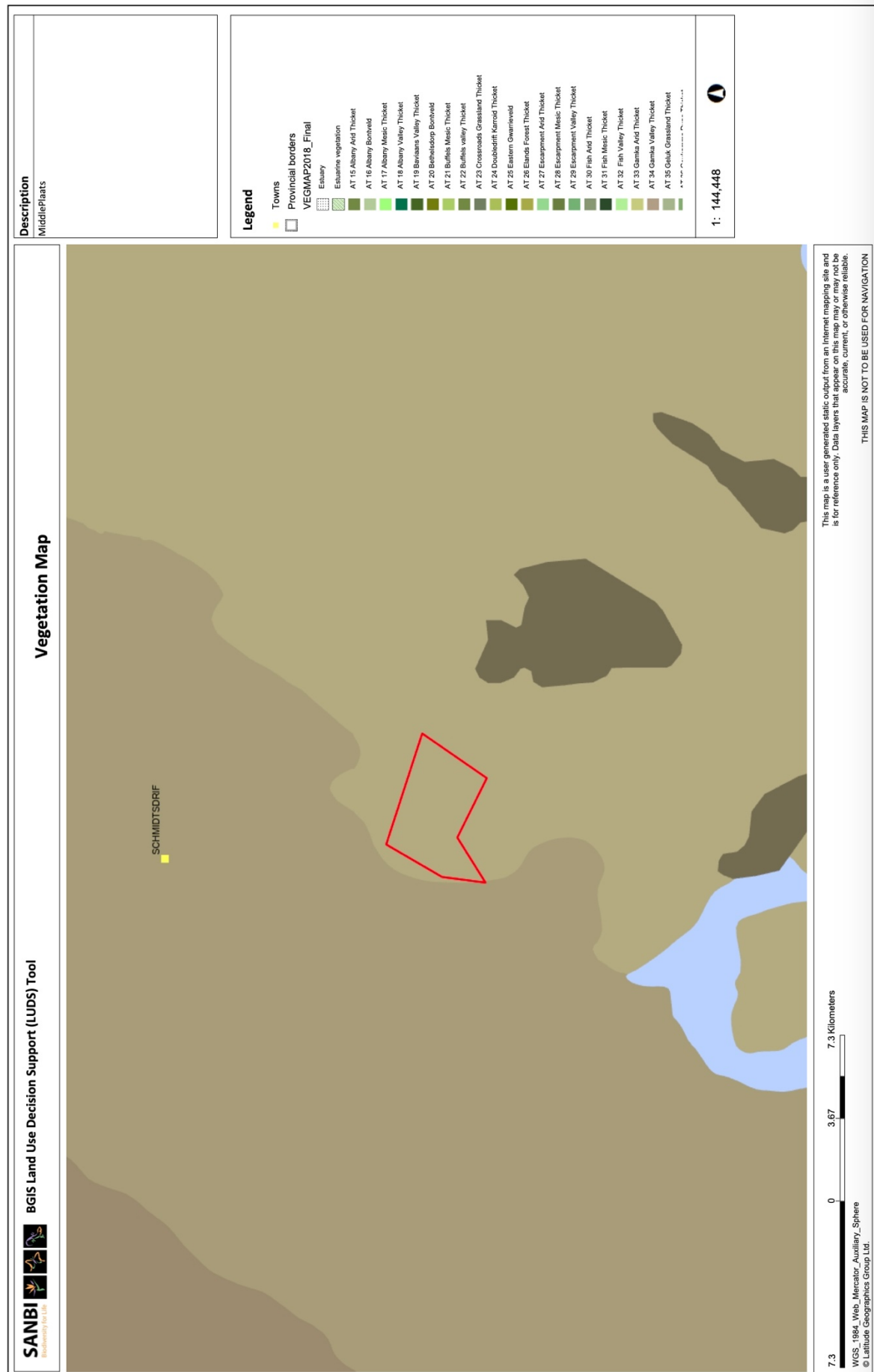
Cucurbitaceae	<i>Acanthosicyos naudinianus</i> (Sond.) C.Jeffrey	Indigenous	LC	
Cyperaceae	<i>Pseudoschoenus inanis</i> (Thunb.) Oteng-Yeb.	Indigenous	LC	
Ebenaceae	<i>Diospyros lycioides</i> Desf.	Indigenous	LC	
Fabaceae	<i>Vachellia erioloba</i> (E.Mey.) P.J.H.Hurter	Indigenous	LC	Protected
Fabaceae	<i>Vachellia haematoxylon</i> (Willd.) Seigler & Ebinger	Indigenous	LC	Protected
Fabaceae	<i>Vachellia karroo</i> (Hayne) Banfi & Gallaso		LC	
Fabaceae	<i>Vachellia tortilis</i> (Forssk.) Gallaso & Banfi			
Fabaceae	<i>Pomaria burchellii</i> (DC.) B.B.Simpson & G.P.Lewis	Indigenous	LC	
Fabaceae	<i>Senegalia mellifera</i> (Vahl) Seigler & Ebinger subsp. <i>detinens</i> (Burch.) Kyal. & Boatwr.	Indigenous	LC	
Fabaceae	<i>Prosopis glandulosa</i> Torr. var. <i>glandulosa</i>			
Gisekiaceae	<i>Gisekia pharnaceoides</i> L.	Indigenous	LC	
Hyacinthaceae	<i>Albuca</i> sp.			
Hyacinthaceae	<i>Albuca prasina</i> (Ker Gawl.) J.C.Manning & Goldblatt	Indigenous		
Hyacinthaceae	<i>Ornithogalum nanodes</i> F.M.Leight.	Indigenous	LC	Schedule 2
Malvaceae	<i>Hermannia bryoniifolia</i> Burch.	Indigenous; Endemic	LC	
Malvaceae	<i>Melhania rehmannii</i> Szyszyl.	Indigenous	LC	
Malvaceae	<i>Hermannia pulchella</i> L.f.	Indigenous	LC	
Malvaceae	<i>Grewia flava</i> DC.		LC	
Menispermaceae	<i>Antizoma angustifolia</i> (Burch.) Miers ex Harv.	Indigenous	LC	
Ophioglossaceae	<i>Ophioglossum reticulatum</i> L.	Indigenous	LC	
Ophioglossaceae	<i>Ophioglossum polyphyllum</i> A.Braun	Indigenous	LC	
Papaveraceae	<i>Argemone mexicana</i> L. forma <i>mexicana</i>	Naturalised		
Papaveraceae	<i>Argemone ochroleuca</i> Sweet subsp. <i>ochroleuca</i>	Naturalised		

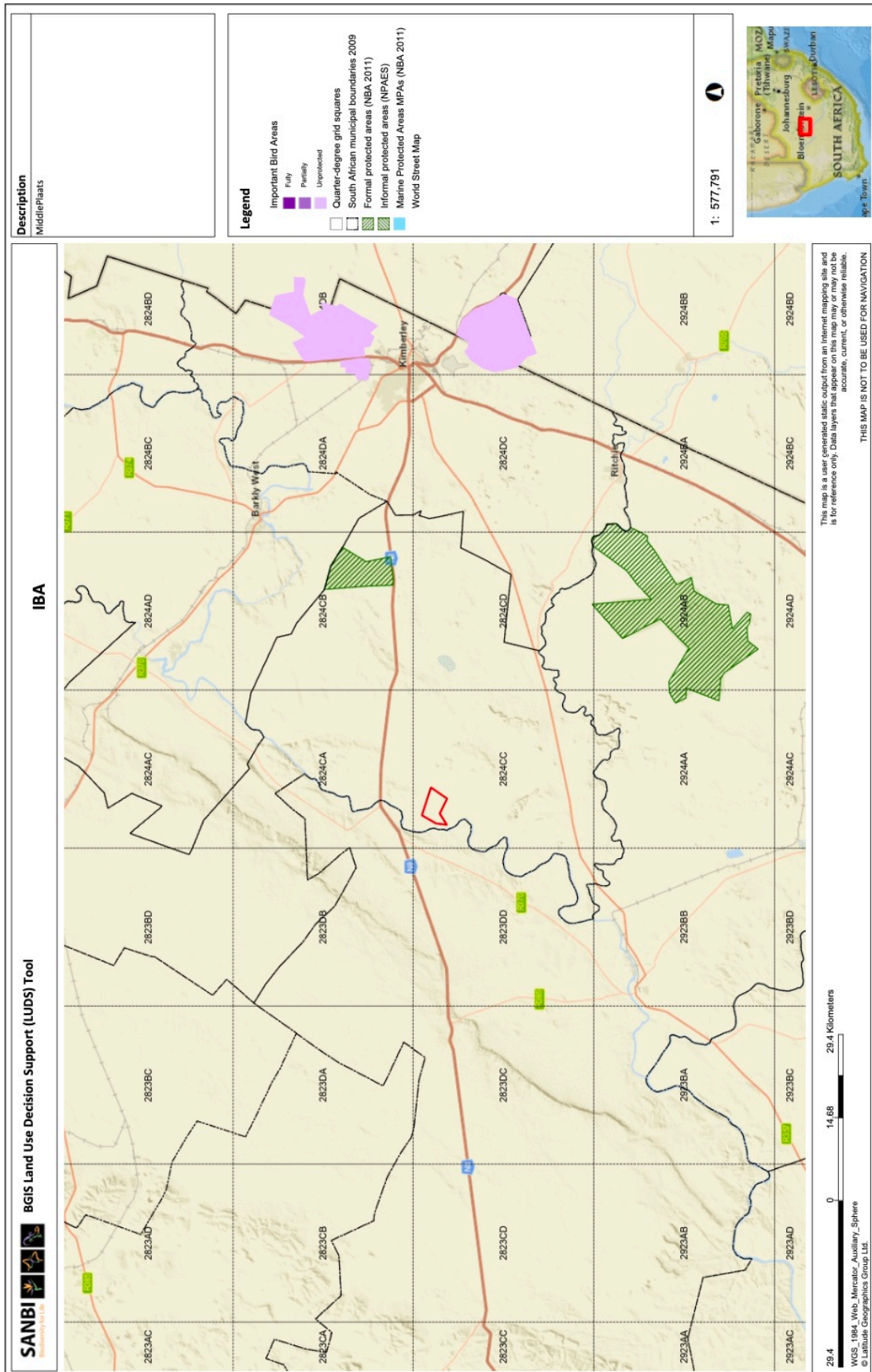
Poaceae	<i>Eragrostis curvula</i> (Schrad.) Nees	Indigenous	LC	
Poaceae	<i>Centropodia glauca</i> (Nees) Cope	Indigenous	LC	
Poaceae	<i>Aristida congesta</i> Roem. & Schult.	Indigenous	LC	
Poaceae	<i>Stipagrostis uniplumis</i> (Licht.) De Winter	Indigenous	LC	
Poaceae	<i>Stipagrostis hirtigluma</i> (Steud.) De Winter	Indigenous	LC	
Poaceae	<i>Tricholaena monachne</i> (Trin.) Stapf & C.E.Hubb.	Indigenous	LC	
Poaceae	<i>Enneapogon scoparius</i> Stapf	Indigenous	LC	
Poaceae	<i>Aristida stipitata</i> Hack.	Indigenous	LC	
Poaceae	<i>Eragrostis pseudobtusa</i> De Winter	Indigenous; Endemic	NE	
Poaceae	<i>Eragrostis lehmanniana</i> Nees var. <i>lehmanniana</i>		LC	
Poaceae	<i>Cynodon dactylon</i> (L.) Pers.		LC	
Poaceae	<i>Schmidtia pappophoroides</i> Steud.		LC	
Polygalaceae	<i>Polygala seminuda</i> Harv.	Indigenous	LC	
Ruscaceae	<i>Sansevieria aethiopica</i> Thunb.	Indigenous	LC	
Saliaceae	<i>Salix mucronata</i> Thunb. subsp. <i>mucronata</i>		LC	
Scrophulariaceae	<i>Nemesia pubescens</i> Benth.	Indigenous		Schedule 2
Scrophulariaceae	<i>Selago mixta</i> Hilliard	Indigenous; Endemic	LC	
Scrophulariaceae	<i>Selago multispicata</i> Hilliard		LC	
Solanaceae	<i>Lycium pilifolium</i> C.H.Wright	Indigenous	LC	
Solanaceae	<i>Lycium hirsutum</i> Dunal	Indigenous	LC	
Solanaceae	<i>Lycium arenicola</i> Miers	Indigenous	LC	
Thymelaeaceae	<i>Lasiosiphon polycephalus</i> (E.Mey. ex Meisn.) H.Pearson		LC	
Zygophyllaceae	<i>Roepera lichtensteiniana</i> (Cham.) Beier & Thulin	Indigenous		
Zygophyllaceae	<i>Zygophyllum lichtensteinianum</i> Cham. & Schltld.		LC	

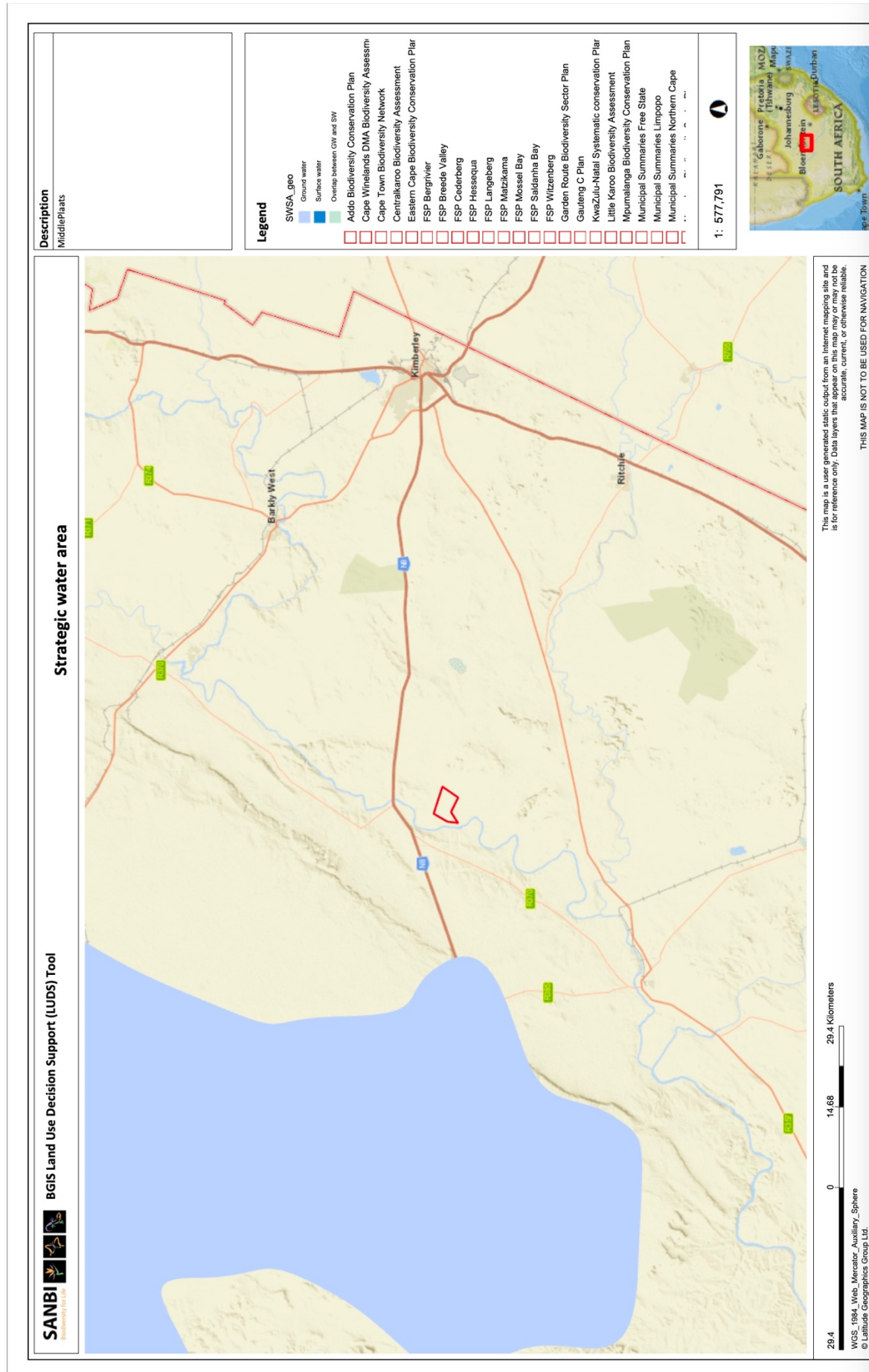
APPENDIX 2

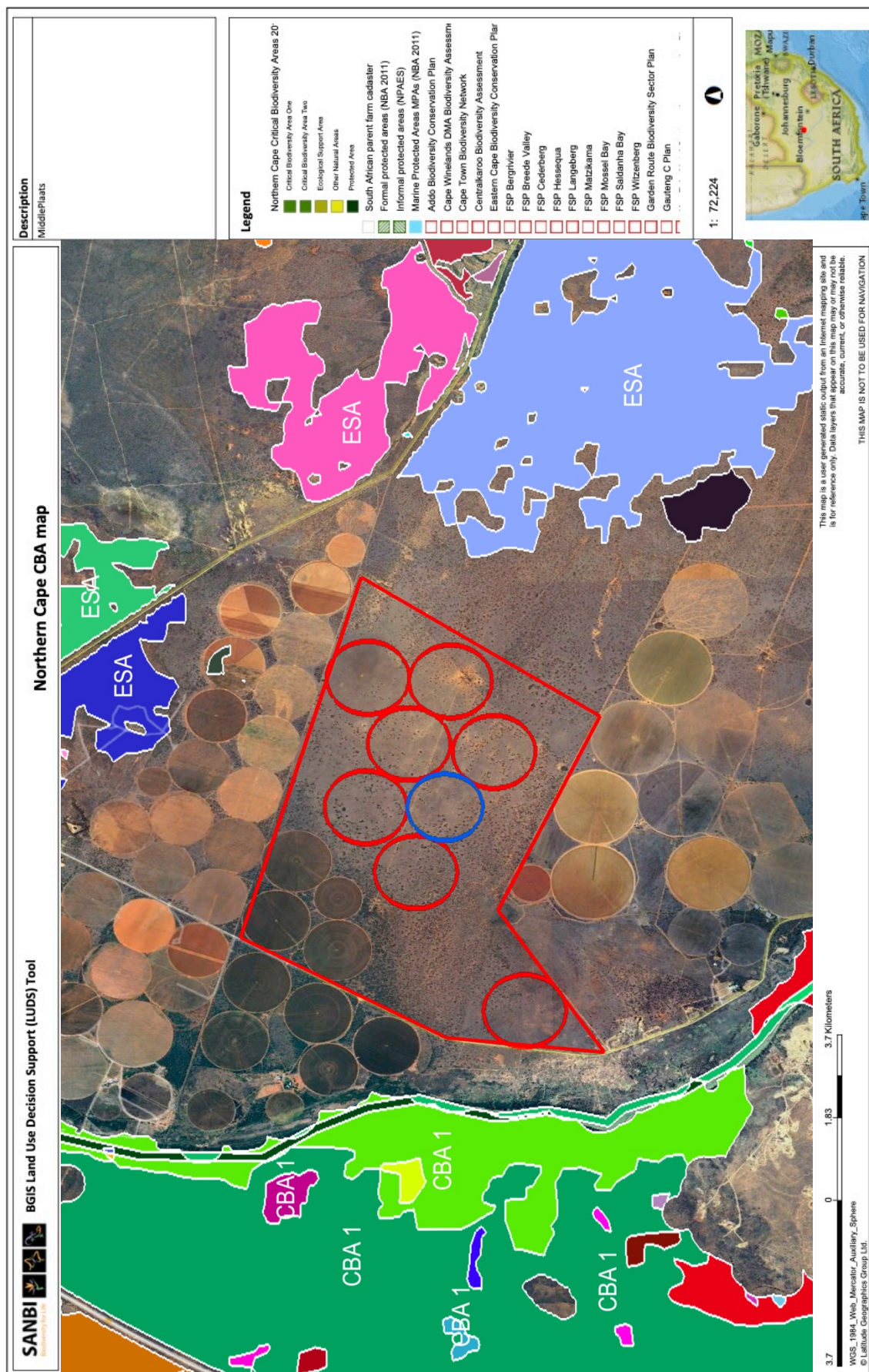
REGIONAL CONSERVATION PLANNING











APPENDIX 3

DETAILS OF SPECIALIST

ABRIDGED CURRICULUM VITA

NATALIE VIVIENNE BIRCH

Date of birth: 21 August 1972

QUALIFICATIONS

BSc (Rhodes University) – Botany and Zoology
 BSc (Hons) Wildlife Management, Pretoria University
 PhD (Rhodes University)

PHD DISSERTATION

Vegetation potential of natural rangelands in the mid Fish River Valley. Towards a sustainable and acceptable management system.

RESEARCH INTERESTS

My academic interests cover various areas dealing with ecological functioning, and wildlife management, with a special interest in the functioning and management of arid and semi arid rangelands.

ACADEMIC AWARD

Awarded a medal in 2001 by the Grassland Society of Southern Africa for: Outstanding Student in Range and Forage Science

PROFESSIONAL EXPERIENCE

1999 – 2000	<u>Eastern Cape Parks Board</u>	Ecologist
2000 -2002	<u>Coastal & Environmental Services</u>	Consultant
2003 – present	<u>Ecological Management Services</u>	Owner/Consultant

I am a founding member of Ecological Management Services, which is based in Kimberley, and we specialise in ecological management and impact assessment. Although we are based in Kimberley we cover most of South Africa and have projects in the Eastern Cape, Free State, North West Province, Northern Cape and Gauteng. We have undertaken impact assessments for various types of developments including urban and rural developments, agricultural developments, as well as developments within the mining sector. We also provide specialist input to various types of projects and have formulated biodiversity offset studies required to off set impacts from large developments.

A selection of recent work is as follows:

- ☐ Department of Agriculture Northern Cape—Hopetown Piggery

- Department of Agriculture Northern Cape—Phillipstown Piggery
- Department of Agriculture Northern Cape—Chikiana Piggery
- Department of Agriculture Northern Cape—De Aar Hydroponics
- Sidi Parani—Fertilizer granulation plant in Christiana
- Tiva Enviro Services - Biodiversity study for De Aar Hospital
- Ghaap Ostrich Abattoir—Biodiversity Study
- Amakhala Nature Reserve—Development of lodge facilities
- IG van der Merwe Trust—Residential development, Douglas
- Valrena Trust—Residential development along Vaal River
- Idstone Pty Ltd—Development of irrigation ground for seed potatoes production
- Tiaan Trust—Development of irrigation ground
- C F Scholtz & Seuns - Development of irrigation ground for growing of crops
- Kosie Smith Trust - Development of irrigation ground for growing seed potatoes
- Bakgat Trust—Development of irrigation ground for growing of crops
- Mount Carmel (pty) Ltd—Development of irrigation ground for growing of crops
- Koppieskraal Plase Rietrivier Beperk—Development of irrigation ground for seed potatoes production
- Genade Boerdery (PTY) Ltd—Development of irrigation ground for growing of crops
- Santarose Investments (Pty) Ltd - Development of irrigation ground for seed potatoes production
- Valrena Trust—Development of irrigation ground for growing of crops
- Middledrift Dairy Trust—Establishment of Dairy
- Eliweni Wildlife (Pty) Ltd - Lodge Development on Amakhala Nature Reserve
- Idstone Pty Ltd—Development of irrigation ground for the growing of seed potatoes
- Trisa Trust—Development of irrigation ground for the growing of seed potatoes
- GWK Pty Ltd—Development of irrigation pivots and vineyards
- Blair Athol Golf course development
- Rolfontein Nature Reserve lodge development
- SLR—Ecological Specialist survey for Kudumane Mine
- Biodiversity offset plan—UMK mine
- Biodiversity Action Plan for UMK mine
- Biodiversity offset Kudumane Mine
- IDC—Ecological Management & Business Plan: Siyancuma Women in Game Initiative
- Swanvest 123 Pty Ltd—Wolverfontein Breeding Facility
- De Beers—Ecological Evaluation and Management Plan for Kleinsee Game Farm
- Kalahari Oryx Game Reserve—Risk Assessment introduction of Lion
- Department of Land Affairs—Ecological Management and Business plan for Thwane Commonage
- Mauricedale Game Ranch—Paardefontein Specialist Vegetation Survey
- Santrosa Investments Pty Ltd—Olie Rivier Game Farm HA
- Manzi Safaris Habitat Assessment
- Thuru Lodge—Risk Assessment & Habitat Analysis
- Dugmore brothers—Habitat assessment Hartebeesthoek
- Schutte Boerdery Trust—Habitat Assessment Glenfrere
- F G. Taljaard—Habitat Assessment Namakwari Game Reserve
- Rivierfront Wild - Doornfontein Habitat Assessment
- Sijibbolet Trust—Hartsvally Habitat Assessment
- Raltefontein Habitat Assessment
- Kalahari Oryx Game Reserve—Specialist Vegetation survey

PROFESSIONAL ASSOCIATIONS

Grassland Society of Southern Africa

South African Council for Natural scientific Professions Registration number 400117/05

RESEARCH PUBLICATIONS

- Evans, N.V., Avis, A.M. and Palmer, A.R. 1997. Changes to the vegetation of the mid-Fish River valley, Eastern Cape South Africa, in response to land-use, as revealed by a direct gradient analysis. *African Journal of Range & Forage science*, **14**(2): 68-74.
- Birch N.V., Avis, A.M. and Palmer, A.R. (1999) The Effect Of Land-Use On The Vegetation Communities Along A Topo-Moisture Gradient In The Mid-Fish River Valley, South Africa. *African Journal of Range & Forage science*, **16**(1): 1-8
- Birch, N.V., Avis, A.M. and Palmer, A.R. 1999. Changes to the vegetation communities of natural rangelands in response to land-use in the mid-Fish River valley, South Africa. *People and Rangelands Building the Future* (Eds D. Eldridge & D. Freudenberger) pp.319-320 vol 1. Proceeding of the VI International Rangeland Congress, Townsville, Queensland, Australia

APPENDIX 4

CA COMMENTS



forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

26 Olien Street, Louisvaleroad, Uptington, 8801 Tel: +27 60 973 1660

Ref: COMMENTS NC-FB-0012-2025-26

Enquiries: Jacoline Mans

Tel: 060 973 1660 Email: Jmans@dfpe.gov.za

EIA COMMENTS NC-FB-0012-2025-26

RE: COMMENTS ON SCOPING REPORT FOR THE PROPOSED GENADE BOERDERY MIDDELPLAATS PIVOT EIA, SCHMITDSDRIFT, SOL PLAATJE LOCAL MUNICIPALITY, FRANCES BAARD DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE (DAERL REF: TBC; EIMS REF: 1683)

DATE: 10 June 2025

Environmental Impact Management Services (Pty) Ltd (EIMS)
P.O. Box 2083
PINEGOWRIE
2123

Dear Mr. Alex Msipa (middelplaats@eims.co.za; Jolene@eims.co.za; monica@eims.co.za)

cc admin@genadeboerdery.co.za

cc Jaolammakhumo7@gmail.com

I refer to your e-mail notification of 3 June 2025.

Please receive comments from the Branch: Forestry Management, Directorate: Forest Resource Protection in the Department of Forestry, Fisheries and the Environment (DFPE) on the above-mentioned proposed development. The due date for comments is 7 July 2025.

The mandate of the Forestry Branch in the Department of Forestry, Fisheries and the Environment (DFPE), as an EIA commenting authority, is to ensure control over developments that affect State forests, natural forests and protected trees.

1. The applicant must assess and quantify the anticipated impacts on protected trees during the EIA phase. See Section 12(1)(d) of the National Forests Act, (Act No. 84 of 1998) ("NFA") and Government Notice (GN) 4496, Government Gazette No. 50291 of 13 March 2024 for the list of protected tree species. Protected trees are known to occur in the vicinity of the study site.
2. Section 15(1) of the NFA states that 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



Batho pele – putting people first

The processing of personal information by the Department of Forestry, Fisheries and the Environment is done lawfully and not excessive to the purpose of processing in compliance with the POPI Act, any codes of conduct issued by the Information Regulator in terms of the POPI Act and/or relevant legislation providing appropriate security safeguards for the processing of personal information of others.

acquire or dispose of any protected tree, or any forest product derived from a protected tree, except under a license granted by the Minister; or in terms of an exemption published by the Minister.

3. The prohibition on protected trees applies to all trees, alive and dead. It also applies to all size classes of the species listed as protected.
4. Cutting or disturbing a protected tree without a valid Forest Act Licence is a **criminal offence** and a transgression of the National Forests Act, 1998 (Act No. 84 of 1998) and carries a fine or imprisonment or both.
5. Protected trees with active bird nests or other significant biodiversity features may not be destroyed without a valid Fauna Permit from the provincial conservation authority, the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform ("DAERL"), if these would be affected.

Comments on Scoping Report (BAR):

6. The applicant, Genade Boerdery Pty Ltd, plans to develop eight (8) new irrigation pivots for the cultivation of potatoes. The development of these pivots will occur in phases over the course of 5 years. The crops will be rotated to prevent blight and allow for recovery of the soil. Once the planting cycle for a pivot area is completed, the area will be reseeded with grazing grasses for cattle. Seven of the new cultivation areas will each cover 60 hectares, and one will cover 50 hectares, resulting in a total of ~470 hectares of indigenous vegetation clearance by the end of the five-year period. The proposed project is located on the farm Middel Plaats South No. 104, Sol Plaatje Local Municipality, Northern Cape. The site is approximately 8 km south of Schmidtdrif. The center point of the site is located at approximately 28°47'8.10"S, 24° 4'29.24"E. The affected vegetation type is Kimberley Thornveld. The site is not located within a Critical Biodiversity Area. Irrigation water will be sourced from the Vaal River and the applicant will utilize their existing Water Use Licence; no additional quantities of water other than what is authorised will be required.

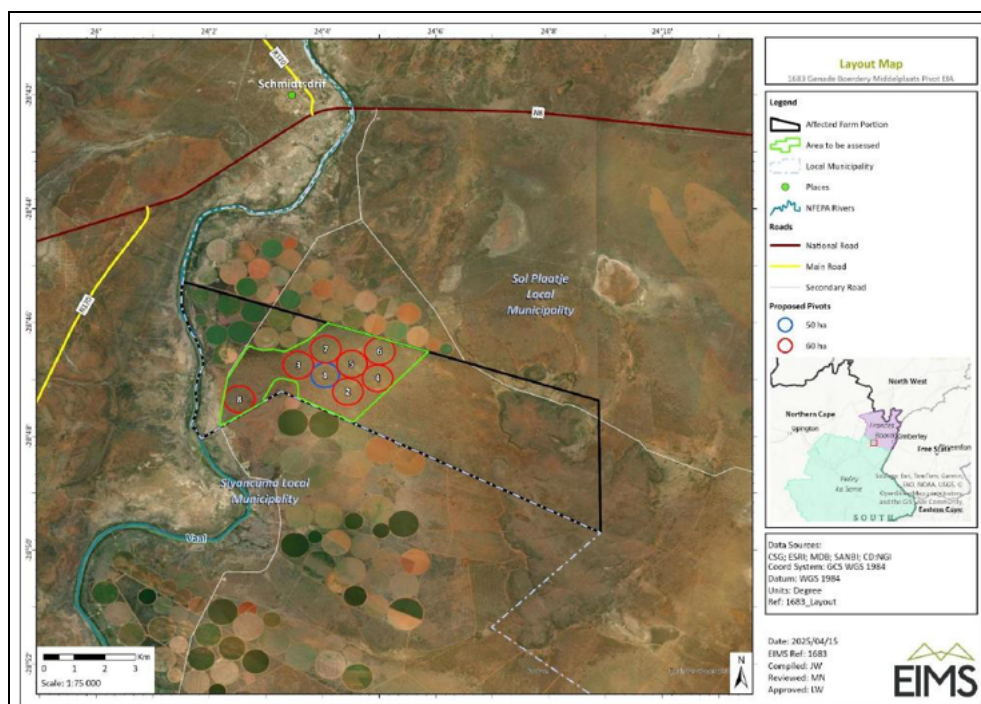


Figure 1: The proposed irrigation pivots as per map extracted from the report.

7. A Terrestrial and Aquatic Biodiversity Assessment was done by Dr. Natalie Birch. According to the Scoping Report, the DFFE Screening tool result for the terrestrial biodiversity theme is **low**, but the suggested sensitivity is **high**. Number 7 of the Biodiversity Assessment Report concluded that the “impact of the impact of the proposed development on the terrestrial and aquatic biodiversity is **moderate to low**....”. Page 102 of the SR, Table 23, indicates the construction phase impacts on Habitat fragmentation, Loss of Natural vegetation and Alien invasion as well as Loss of Species of Conservation Concern are **medium to high pre-mitigation**, and **medium to low after mitigation**. These contradictions need to be clarified, since the SR elevated the “low” sensitivity to a suggested “high” sensitivity.

Screening Specialist Required:	Tool Study	Level of Sensitivity:	Suggested Sensitivity:	Required level of Assessment	Motivation
					commissioned to verify the site's Palaeontological Sensitivity.
Terrestrial Biodiversity Impact Assessment		Low	High	Full Study	A DFFE compliant Terrestrial Biodiversity Assessment by a suitably qualified specialist has been commissioned to verify the site's Terrestrial Biodiversity Sensitivity.
Aquatic Biodiversity Impact Assessment		Low	Low	Compliance Statement	A DFFE compliant Aquatic Ecology Compliance Statement by a suitably qualified specialist has been commissioned to verify the site's Aquatic Biodiversity Sensitivity.
Hydrology Assessment		Not Specified	Low	None	It is the opinion of the EAP, from a desktop analysis, as well as verified during the site visit, that the proposed activity does not require a hydrology specialist study as there are no natural

Figure 2: A screenshot of page 16 of the Site Sensitivity and Verification report.

Impact	Alternative	Phase	Pre-Mitigation Significance Score	Pre-Mitigation Significance	Post-Mitigation Significance Score	Post-Mitigation Significance	Confidence	Cumulative Impact	Irreversible loss	Priority Factor	Final score	Final Significance
Loss of fossil Heritage	A1	Construction	-1 1 5 3 5 -3.5 3	-10.5	Medium to high -	-1 1 5 1 5 -3 2	-6	Medium to low -	High	1 3 1.25	-7.50	Medium to low -
Habitat fragmentation, Loss of Natural vegetation and Alien invasion	A1	Construction	-1 2 4 3 4 -3.25 3	-9.75	Medium to high -	-1 1 4 2 3 -2.5 3	-7.5	Medium to low -	High	2 1 1.13	-8.44	Medium to low -
Loss of Species of Conservation Concern	A1	Construction	-1 2 4 3 3 -3 3	-9	Medium to high -	-1 1 4 2 3 -2.5 3	-7.5	Medium to low -	High	2 1 1.13	-8.44	Medium to low -
Anthropogenic Disturbances, Intentional and/or accidental killing of fauna	A1	Construction	-1 1 3 2 2 -2 3	-6	Medium to low -	-1 1 3 1 2 -1.75 2	-3.5	Low -	Medium	2 1 1.13	-3.94	Low -
Habitat fragmentation, Loss of Natural vegetation and Alien invasion	A1	Operation	-1 2 4 3 4 -3.25 3	-9.75	Medium to high -	-1 1 4 2 3 -2.5 3	-7.5	Medium to low -	High	2 1 1.13	-8.44	Medium to low -
Anthropogenic Disturbances, Intentional and/or accidental killing of fauna	A1	Operation	-1 1 3 2 2 -2 3	-6	Medium to low -	-1 1 3 1 2 -1.75 2	-3.5	Low -	Medium	2 1 1.13	-3.94	Low -
Impact on Biodiversity - Alien Species Invasion	A1	Decommissioning	-1 2 4 3 4 0 3	-9.75	Medium to high -	-1 1 4 2 2 -2.25 3	-6.75	Medium to low -	High	1 1 1.00	-6.75	Medium to low -
Socio-economic Impacts - Construction	A1	Construction	1 3 1 1 3 2 4	8	Low to medium +	1 3 1 2 3 2.25 4	9	Medium to high +	Medium	1 1 1.00	9.00	Medium to high +
Socio-economic Impacts - Operation	A1	Operation	1 3 2 2 3 2.5 4	10	Medium to high +	1 3 2 3 3 2.75 4	11	Medium to high +	Medium	2 1 1.13	12.38	Medium to high +
Destruction or disturbance of identified stone tool sites and finds.	A1	Construction	-1 1 5 1 2 -2.25 5	-11.25	Medium to high -	-1 1 1 2 2 -1.5 2	-3	Low -	Medium	1 2 1.13	-3.38	Low -
Destruction or disturbance of undiscovered below-ground heritage features.	A1	Construction	-1 1 5 4 5 -3.75 2	-7.5	Medium to low -	-1 1 1 2 3 -1.75 2	-3.5	Low -	Medium	1 2 1.13	-3.94	Low -
Noise Nuisance	A1	Construction	-1 2 1 3 2 -2 4	-8	Medium to low -	-1 1 1 2 1 -1.25 2	-2.5	Low -	High	1 1 1.00	-2.50	Low -
Noise Nuisance	A1	Operation	-1 2 2 3 2 -2.25 4	-9	Medium to high -	-1 1 2 2 1 -1.5 2	-3	Low -	High	1 1 1.00	-3.00	Low -
Fire Damage	A1	Construction	-1 2 2 3 3 -2.5 3	-7.5	Medium to low -	-1 2 2 1 2 -1.75 1	-1.75	Low -	Low	2 1 1.13	-1.97	Low -

Figure 3: Table 23 on page 102 of the Scoping Report shows the construction impacts on terrestrial biodiversity as medium to high pre-mitigation and medium to low post-mitigation.

8. Page 33, number 1.8.1 acknowledges limits to current knowledge, e.g. gaps, uncertainties and assumptions, stating that the “exact number and location of protected plant species within the proposed development footprint is not known. The EMPr will include a requirement for a specialist walkthrough to identify any protected species within the development footprint and to oversee the relocation of these plants, if required, prior to any developments.” The potential impact on protected tree species must be quantified during the EIA phase.
9. Number 7.4 of the SR refers to Terrestrial Biodiversity. Four plant communities were identified, mixed *Vachellia* Savannah, *Vachellia erioloba* woodland (occurs in the northwestern section of the property with high density *V. erioloba*), Grasslands and *Senegalia mellifera* scrub. The former two plant communities contain protected *V. erioloba*, *V. haematoxylon* and *Boscia albitrunca*. The report stated that although *B. albitrunca* is recorded on site, it does not occur within the proposed development footprint(s). The report confirmed the presence of protected *V. erioloba* and *V. haematoxylon* within the proposed development footprints, but did not quantify the potential impacts. It only stated that the *V. erioloba* woodland has a high-density *V. erioloba* but gave no indication of the number of trees per hectare.

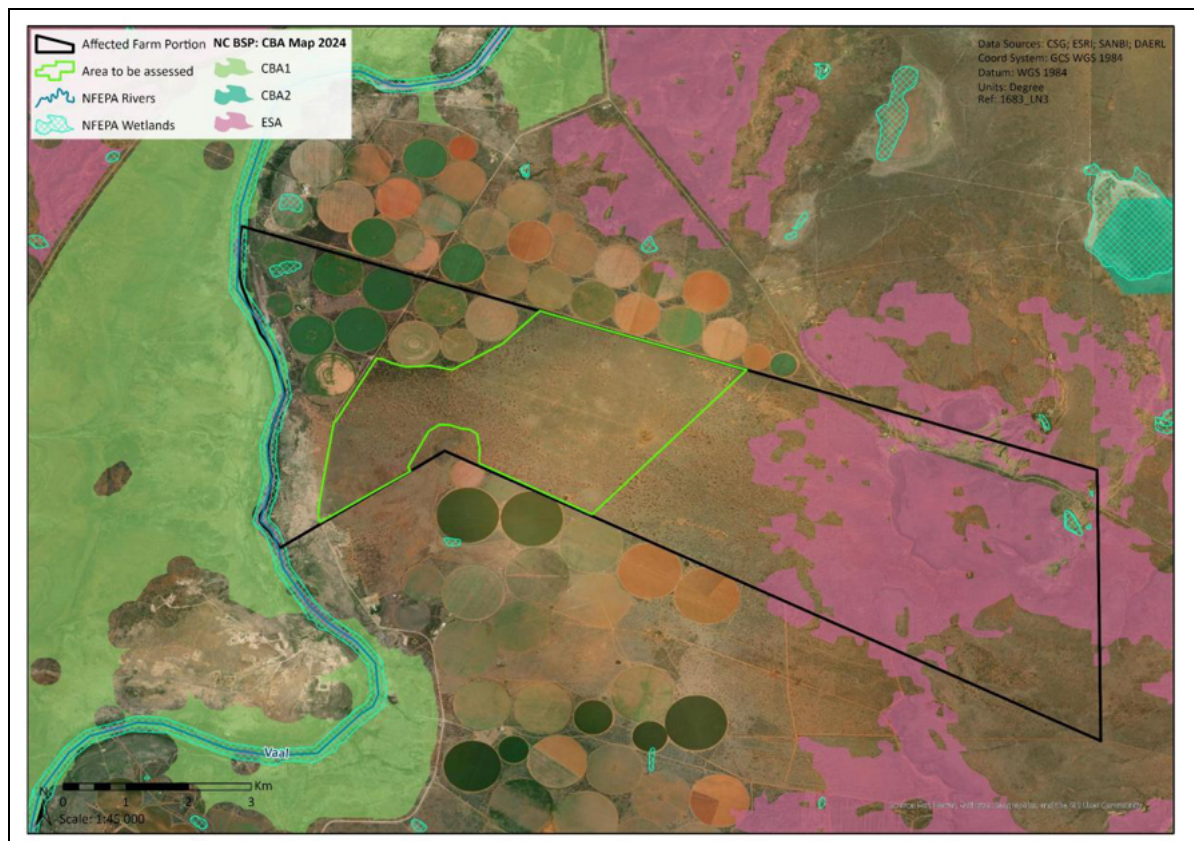


Figure 4: A Google Earth image showing the site in relation to Critical Biodiversity Areas.

10. Number 7.4.3 of the Scoping Report refers to alien invasive species under CARA and NEMBA. However, the Northern Cape Nature Conservation Act, 2009 (Act No. 9 of 2009), Schedule 6, should also be consulted in this regard.
11. Under alien invasive vegetation, the suggested mitigation measures are that “alien vegetation that has grown in the pivot areas and disturbed land must be removed through approved methods”. What is meant by approved methods and who must approve the methods?

12. The report states that the planned pivots mostly fall within the moderate sensitivity areas. The high and moderate sensitivity areas contain protected trees; the areas of greater tree density have been classified as highly sensitive areas. These trees will be lost when the vegetation is removed for the construction of the pivots. The *Vachellia erioloba* is also a protected species under the National Forests Act of 1998 (Act 84 of 1998). Number 8.2.2.2 states the “areas where the protected trees occur in high densities has been excluded from development.” The SR confirms that “the clearing of vegetation will result in the loss of some protected flora”. It further states “A search and rescue operation should be performed prior to clearing, it is however not a feasible or practical option regarding the protected trees, so it is important to ensure that trees between the pivots remain undisturbed. A permit is required if any protected trees need to be cut or removed within the development footprint.” Images extracted from the report confirms that even in the ‘moderate sensitive’ areas, there is high density protected trees as can be seen in figure 6 below.

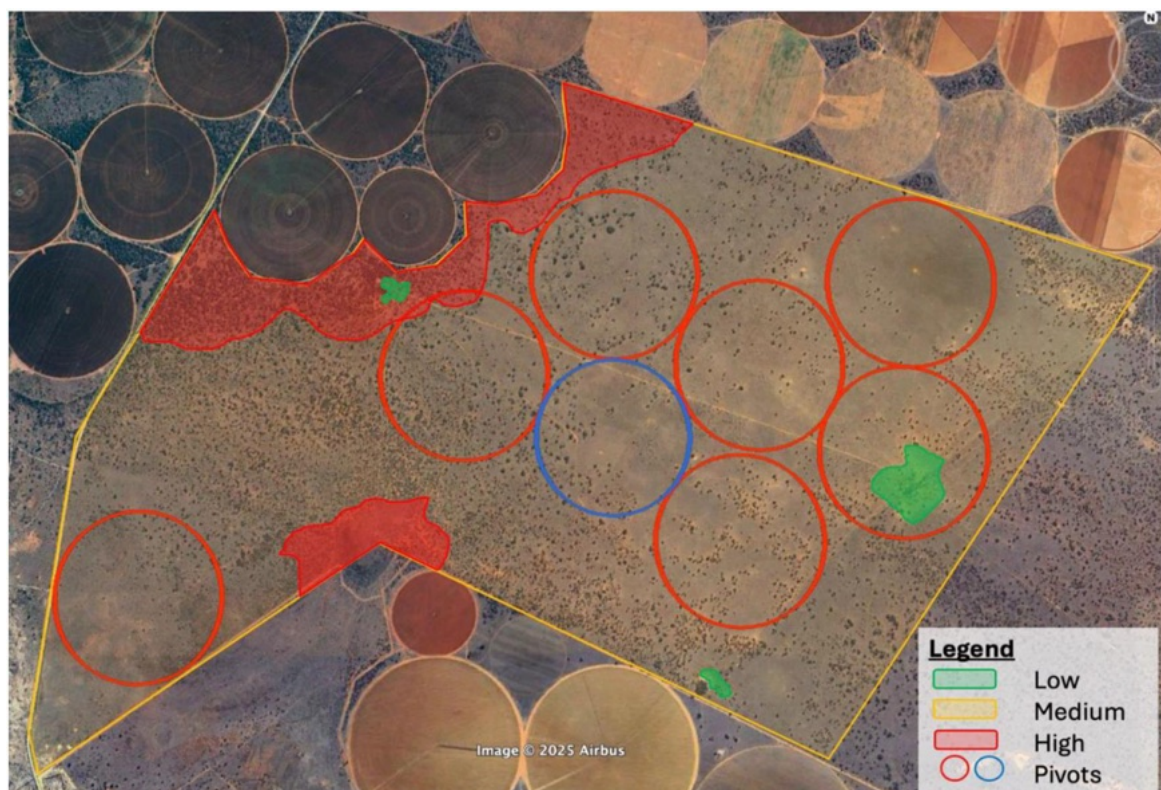


Figure 5: Terrestrial Biodiversity Site Sensitivity Map (EMS, 2025).



Figure 6: Photographs taken from the proposed pivot 3 (left) and pivot 4 (right) showing high density protected trees.

13. On the EIA application form, number 8, “no” was ticked for authorisations required under Other National legislation, yet the SR confirmed the presence of NFA listed protected tree species which may not be disturbed without a valid Forest Act Licence under the National Forests Act, 1998 (Act No. 84 of 1998) as amended.

Recommendations:

14. The potential impacts on protected tree species must be quantified during the EIA phase and if significant, a Biodiversity Offset Report must be compiled by a suitably qualified offset specialist for comments (and approval by the relevant regulating authorities) and appended to the Final EIR as per National Biodiversity Offset Guideline.
15. The DFFE is concerned about the proposed development which may have significant unavoidable impacts on protected trees, which provide habitat to critically endangered, endangered and vulnerable bird species.
16. Having an Environmental Authorisation does not exempt the holder of such authorisation from complying with other applicable environmental legislation and permit and licence requirements.
17. Please quote the Reference Number NC-FB-0012-2025-26, should you wish to correspond further on this matter. Enquiries may be directed to Ms. Jacoline Mans at Jmans@dffe.gov.za, Cell 060 973 1660.

Yours sincerely



Ms Jacoline Mans
DEPUTY DIRECTOR: FOREST RESOURCE PROTECTION (NC)
BRANCH: FORESTRY MANAGEMENT
DATE: 10 June 2025

APPENDIX 5

IMPACT ASSESSMENT METHODOLOGY

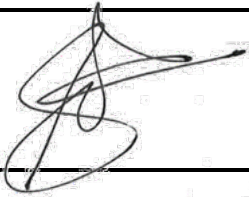

TITLE:

ENVIRONMENTAL IMPACT ASSESSMENT RATING PROCEDURE



EIMS

ENVIRONMENTAL
IMPACT
MANAGEMENT
SERVICES

REV:	02	AUTHOR		APPROVED	
EFFECTIVE DATE:	NAME:	L. WHITLOW	NAME:	A. SMITH	
	DATE:	29 January 2025	DATE:	29 January 2025	
	SIGN:		SIGN:		
COPY / STATUS No:		MASTER COPY		DOCUMENT No:	PRO 106

TITLE:	ENVIRONMENTAL IMPACT ASSESSMENT RATING PROCEDURE	DOC No:	PRO 106	REV:	02	Page 2 of 7
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1. Purpose

The purpose of this procedure is to guide the undertaking of an impact and risk assessment process, as required under the regulations promulgated under the National Environmental Management Act (Act 107 of 1998 - NEMA).

2. Scope

This procedure provides the methodology to be applied to environmental impacts and risks identified during the Environmental Impact Assessment Process. The methodology ensures that consistent impact assessment rating is carried out that is legally compliant and aligned with EIMS's objective of providing a quality service.

3. References

GNR. 982 National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations, 2014 – hereafter referred to as the Regulations.

4. Additional Guidelines and References

Guidelines and Reference Docs (not exhaustive – please verify with the applicable competent authority).	
Compulsory Compliance: GNR. 982 National Environmental Management Act (Act No. 107 of 1998 - NEMA): Environmental Impact Assessment Regulations, 2014.	National
Companion Guideline for Implementation: Environmental Management Assessment Regulations, 2010 - GN 805/2012 (NEMA)	National
DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5, Department of Environmental Affairs and Tourism (DEAT), Pretoria	National

5. Definitions and Abbreviations

Refer to Chapter 1 of the Regulations.

6. Procedure

The impact significance rating methodology, as presented herein and utilised for all EIMS Impact Assessment Projects, is guided by the requirements of the NEMA EIA Regulations 2014 (as amended). The approach may be altered or substituted on a case by case basis if the specific aspect being assessed requires such- such instances require prior EIMS Project Manager approval. The broad approach to the significance rating methodology is to determine the significance (S) of an environmental risk or impact by considering the consequence (C) of each impact (comprising Nature, Extent, Duration, Magnitude, and Reversibility) and relating this to the probability/ likelihood (P) of the impact occurring. The S is determined for the pre- and post-mitigation scenario. In addition, other factors, including cumulative impacts and potential for irreplaceable loss of resources, are used to determine a prioritisation factor (PF) which is applied to the S to determine the overall final significance rating (FS). The impact assessment will be applied to all identified alternatives.

a. Determination of Significance

The final significance (FS) of an impact or risk is determined by applying a prioritisation factor (PF) to the post-mitigation environmental significance. The significance is dependent on the consequence (C) of the particular impact and the probability (P) of the impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M), and Reversibility (R) applicable to the specific impact.

For the purpose of this methodology the consequence of the impact is represented by:

$$C = \frac{(E + D + M + R) * N}{4}$$

Each individual aspect in the determination of the consequence is represented by a rating scale as defined in Table 1 below.

TITLE:	ENVIRONMENTAL IMPACT ASSESSMENT RATING PROCEDURE	DOC No:	PRO 106	REV:	02	Page 3 of 7
---------------	---	----------------	---------	-------------	----	--------------------

Table 1: Criteria for Determining Impact Consequence

Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e. Highly localised, limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property or site boundary, or the area within a few hundred meters of the site)
	3	Local (i.e. beyond the site boundary within the Local administrative boundary (e.g. Local Municipality) or within consistent local geographical features, or the area within 5 km of the site)
	4	Regional (i.e. Far beyond the site boundary, beyond the Local administrative boundaries within the Regional administrative boundaries (e.g. District Municipality), or extends into different distinct geographical features, or extends between 5 and 50 km from the site).
	5	Provincial / National / International (i.e. extends into numerous distinct geographical features, or extends beyond 50 km from the site).
Duration	1	Immediate (<1 year, quickly reversible)
	2	Short term (1-5 years, less than project lifespan)
	3	Medium term (6-15 years)
	4	Long term (15-65 years, the impact will cease after the operational life span of the project)
	5	Permanent (>65 years, no mitigation measure of natural process will reduce the impact after construction/ operation/ decommissioning).
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected)
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected, or affected environmental components are already degraded)
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way; moderate improvement for +ve impacts; or where change affects area of potential conservation or other value, or use of resources).
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease; high improvement for +ve impacts; or where change affects high conservation value areas or species of conservation concern)
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease, substantial improvement for +ve impacts; or disturbance to pristine areas of critical conservation value or critically endangered species)
Reversibility	1	Impact is reversible without any time and cost.

TITLE:	ENVIRONMENTAL IMPACT ASSESSMENT RATING PROCEDURE	DOC No:	PRO 106	REV:	02	Page 4 of 7
---------------	---	----------------	---------	-------------	----	--------------------

	2	Impact is reversible without incurring significant time and cost.
	3	Impact is reversible only by incurring significant time and cost.
	4	Impact is reversible only by incurring very high time and cost.
	5	Irreversible Impact.

Once the C has been determined, the significance is determined in accordance with the standard risk assessment relationship by multiplying the C and the P. Probability is rated/ scored as per Table 2.

It is noted that both environmental risks as well as environmental impacts should be identified and assessed. Environmental Risk can be regarded as the potential for something harmful to happen to the environment, and in many instances is not regarded as something that is expected to occur during normal operations or events (e.g. unplanned fuel or oil spills at a construction site). Probability and likelihood are key determinants or variables of environmental risk. Environmental Impact can be regarded as the actual effect or change that happens to the environment because of an activity and is typically an effect that is expected from normal operations or events (e.g. vegetation clearance from site development results in loss of species of concern). Typically the probability of an unmitigated environmental impact is regarded as highly likely or certain (management and mitigation measures would ideally aim to reduce this likelihood where possible). In summary, environmental risk is about what could happen, while environmental impact is about what does happen.

Table 2: Probability/ Likelihood Scoring

Probability	1	Improbable (Rare, the event may occur only in exceptional circumstances, the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <5% chance).
	2	Low probability (Unlikely, impact could occur but not realistically expected; >5% and <20% chance).
	3	Medium probability (Possible, the impact may occur; >20% and <50% chance).
	4	High probability (Likely, it is most probable that the impact will occur- > 50 and <90% chance).
	5	Definite (Almost certain, the impact is expected to, or will, occur, >90% chance).

The result is a qualitative representation of relative significance associated with the impact. Significance is therefore calculated as follows:

$$S = C \times P$$

Table 3: Determination of Significance

Consequence	5- Very High ¹	5	10	15	20	25
	4- High	4	8	12	16	20
	3- Medium	3	6	9	12	15
	2- Low	2	4	6	8	10
	1- Very low	1	2	3	4	5

¹ In the event that an impact or risk has very high or catastrophic consequences, but the likelihood/ probability is low, then the resultant significance would be Low-medium. This does in certain instances detract from the relative important of this impact or risk and must consequently be flagged for further specific consideration, management, mitigation, or contingency planning.

TITLE:	ENVIRONMENTAL IMPACT ASSESSMENT RATING PROCEDURE	DOC No:	PRO 106	REV:	02	Page 5 of 7
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		1- Improbable	2- Low	3- Medium/ Possible	4- High/ Probable	5- Highly likely/ Definite
	Probability					

The outcome of the significance assessment will result in a range of scores, ranging from 1 through to 25. These significance scores are then grouped into respective classes as described in Table 4.

Table 4: Significance Scores

S Score	Description
≤4.25	Low (i.e. where this impact is unlikely to be a significant environmental risk/ reward).
>4.25, ≤8.5	Low-Medium (i.e. where the impact could have a significant environmental risk/ reward).
>8.5, ≤13.75	High-Medium (i.e. where the impact could have a significant environmental risk/ reward).
>13.75	High (i.e. where the impact will have a significant environmental risk/ reward).

The impact significance will be determined for each impact without relevant management and mitigation measures (pre-mitigation significance), as well as post implementation of relevant management and mitigation measures (post-mitigation significance). This allows for a prediction in the degree to which the impact can be managed/mitigated.

b. Impact Prioritization

Further to the assessment criteria presented in the section above, it is necessary to consider each potentially significant impact in terms of:

1. Cumulative impacts; and
2. The degree to which the impact may cause irreplaceable loss of resources.

To ensure that these factors are considered, an impact prioritisation factor (PF) will be applied to each impacts' post-mitigation significance (post-mitigation). This prioritisation factor does not aim to detract from the significance ratings but rather to focus the attention of the decision-making authority on the higher priority/significance issues and impacts. The PF will be applied to the post-mitigation significance based on the assumption that relevant suggested management/mitigation impacts are implemented.

Table 5: Criteria for Determining Prioritisation

Cumulative Impact (CI)	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/ definite that the impact will result in spatial and temporal cumulative change.
	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.

TITLE:	ENVIRONMENTAL IMPACT ASSESSMENT RATING PROCEDURE	DOC No:	PRO 106	REV:	02	Page 6 of 7
---------------	--	----------------	---------	-------------	----	--------------------

Irreplaceable Loss of Resources (LR)	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).

The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criteria represented in Table 5. The impact priority is therefore determined as follows:

$$\text{Priority} = CI + LR$$

The result is a priority score which ranges from 2 to 6 and a consequent PF ranging from 1 to 1.5 (Refer to Table 6).

Table 6: Determination of Prioritisation Factor

Priority	Prioritisation Factor
2	1
3	1.125
4	1.25
5	1.375
6	1.5

In order to determine the final impact significance (FS), the PF is multiplied by the post-mitigation significance scoring. The ultimate aim of the PF is an attempt to increase the post mitigation environmental risk rating by a factor of 0.5, if all the priority attributes are high (i.e. if an impact comes out with a high medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a higher significance).

Table 7: Final Environmental Significance Rating

Significance Rating	Description
<-25	Very High (Impacts in this class are extremely significant and pose a very high environmental risk. In certain instances these may represent a fatal flaw. They are likely to have a major influence on the decision and may be difficult or impossible to mitigate. Offset's may be necessary.
<-13.75 to -25	High negative (These impacts are significant and must be carefully considered in the decision-making process. They have a high environmental risk or impact and require extensive mitigation measures).
-8.5 to -13.75	Medium-High negative (i.e. Impacts in this class are more substantial and could have a significant environmental risk. They may influence the decision to develop in the area and require more robust mitigation measures).
<-4.25 to <-8.5	Medium- Low negative (i.e. These impacts are slightly more significant than low impacts but still do not pose a major environmental risk. They might require some mitigation measures but are generally manageable).

TITLE:	ENVIRONMENTAL IMPACT ASSESSMENT RATING PROCEDURE	DOC No:	PRO 106	REV:	02	Page 7 of 7
---------------	---	----------------	---------	-------------	----	--------------------

Significance Rating	Description
-1 to -4.25	Low negative (i.e. Impacts in this class are minor and unlikely to have a significant environmental risk. They do not influence the decision to develop in the area and are typically easily mitigated.
0	No impact
1 to 4.25	Low positive
>4.25 to <8.5	Medium-Low positive
8.5 to 13.75	Medium-High positive
>13.75	High positive

The significance ratings and additional considerations applied to each impact will be used to provide a quantitative comparative assessment of the alternatives being considered. In addition, professional expertise and opinion of the specialists and the environmental consultants will be applied to provide a qualitative comparison of the alternatives under consideration. This process will identify the best alternative for the proposed project.

7. Responsibilities

It is the responsibility of each EIMS employee, and each external Specialist appointed by EIMS to ensure that this procedure is carried out as described. All the personnel within the organization have the responsibility to report any deviations/changes from the procedures to management. This is to ensure that the necessary changes are documented after approval.

It is the responsibility of the consultant (as applicable) assigned with the task of report compilation to ensure that this methodology/ procedure is strictly applied. It is the responsibility of the assigned Consultant or Quality Reviewer to review and verify that the procedure has been complied with, and such documented at the specified quality check intervals.

8. Records

RECORD	STORAGE LOCATION	STORAGE SYSTEM	RESPONSIBLE PERSON	RETENTION PERIOD
Significance Rating Input Spreadsheet	Project File - /Server/assignments/ Job#/Records	Electronic- Scanned PDF	Project Manager	10 Years

9. Record of Changes, Revisions and Cancellations

RECORD OF CHANGES, REVISIONS AND CANCELLATIONS		
DATE	NATURE / DETAIL OF CHANGE	REV No.
3/12/2024	Update impact criteria descriptions.	01
29/01/2025	Corrections to Significance class numbering	02