

Ecological Compliance Statement

**Bloemspruit Small Holdings
Residential Development,
Bloemfontein, Free State Province
January 2024**

Compiled for:



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Leave a future behind

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Abbreviations

BA	Basic Assessment
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983)
CBA	Critical Biodiversity Area
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
ESA	Ecological Support Area
MAP	Mean Annual Precipitation
NEMBA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NEMA	National Environmental Management Act (Act 107 of 1998)
NFA	National Forests Act (Act 84 of 1998)
NWA	National Water Act (Act 36 of 1998)
ONA	Other Natural Area
PES	Present Ecological State
REC	Recommended Ecological Category
SACNASP	South African Council for Natural Scientific Professions
SANBI	South African National Biodiversity Institute
SEI	Site Ecological Importance
WULA	Water Use License Application

Declaration of Independence

I, Adriaan Johannes Hendrikus Lamprecht, declare that I:

- am the Director and Ecological Specialist of EcoFocus Consulting (Pty) Ltd
- act as an independent specialist consultant in the field of botany and ecology
- am assigned as the Ecological Specialist consultant by the Environmental Assessment Practitioner (EAP), Green Box Consulting, for the proposed development
- do not have or will not have any financial interest in the undertaking of the proposed project activity other than remuneration for work as stipulated in the terms of reference/scope of work as per the quotation provided
- confirm that remuneration for my services relating to the proposed development is not linked to approval or rejection of the project by the competent authority
- have no interest in secondary or subsequent developments as a result of the authorisation of the proposed project
- have no and will not engage in any conflicting interests in the undertaking of the activity
- undertake to disclose to the applicant and the competent authority any information that has or may have the potential to influence the decision of the competent authority
- will provide the applicant and competent authority with access to all relevant project information in my possession whether favourable or not

AJH Lamprecht



Signature

1. Introduction

The project applicant, Lenova Construction and Development (Pty) Ltd, proposes to formally develop a vacant portion of land for residential purposes, within the suburb of Bloemspruit. The suburb forms part of the city of Bloemfontein, Free State Province. According to the information received from the EAP, the proposed development will tie into the existing municipal water, sewage and electrical infrastructure.

Green Box Consulting was appointed by the applicant as the independent Environmental Assessment Practitioner (EAP), to conduct the legally required Basic Assessment (BA) process.

Due to the nature of potential ecological impacts posed by the proposed development to the local ecosystem and ecology, an Ecological study is required. This is required in order to determine the potential presence of ecologically sensitive/conservationally significant areas, plant- and faunal species as well as significant watercourses and/or wetlands and/or other aquatic ecological features/habitats, which may be adversely affected by the proposed development

Potential ecological impacts posed by the proposed development to the local ecosystem and ecology, must be identified, evaluated, rated and discussed. Impact mitigation and management measures in accordance with the requirements of the National Environmental Management Act (Act 107 of 1998) Mitigation Hierarchy, must subsequently be recommended. This must be done in order to attempt to reduce/alleviate the adverse effects of identified potential ecological impacts associated with the proposed development.

EcoFocus Consulting was consequently appointed by the EAP as the independent ecological specialist, to conduct the required Ecological study for the proposed development. This report constitutes the Ecological Compliance Statement.

Preliminary preparations conducted prior to the ecological site assessment, were as follows:

- Georeferenced spatial information was obtained of the proposed development area, in order to determine the direct impact footprint area.
- A desktop study was conducted of the most up-to-date information/data available on the relevant vegetation types, national/provincial conservation significance status and the potential/likely presence of watercourses/wetlands associated with the proposed development area.
- A desktop study was conducted of conservationally significant faunal and avifaunal species which can potentially be encountered within the proposed development area.

2. Date of Ecological Site Assessment

Site assessments of the proposed development area was conducted on 25 and 26 January 2024. This date forms part of the summer season and most plant species could therefore be successfully identified. More underground bulb-plant species (geophytes) could however potentially be present throughout the grassland habitat, which were not necessarily visible aboveground due to the timing of the site assessment.

3. Methodology

- The proposed development area was assessed on foot in a square grid formation.
- Visual observations/identifications were made of general terrestrial botanical/vegetation habitats and their conditions as well as any ecologically sensitive/conservationally significant areas/habitats within the assessment area.
- Visual observations/identifications were made of general and conservationally significant plant species encountered within the assessment area.
 - Identified plant species were listed and categorised as per the Red Data Species List; Protected Species List of the National Forests Act (Act 84 of 1998), Provincially Protected species of the Free State's Nature Conservation Ordinance (No 8 of 1969) as well as the Invasive Species List of the National Environmental Management: Biodiversity Act (Act 10 of 2004), Alien and Invasive Species Regulations, 2014.
- A desktop assessment was conducted of conservationally significant faunal and avifaunal species which can potentially be encountered within the assessment area.
 - The Virtual Museum and the IUCN Red List of Threatened Species were used for the desktop assessment.
 - The likelihood was discussed of identified faunal and avifaunal species utilising the terrestrial botanical/vegetation habitats and significant aquatic ecological features/habitats within the assessment area as refuge or for breeding, foraging and/or persistence purposes.
 - No actual on-site trapping, sampling or specifically focused assessments of any faunal or avifaunal species was conducted.
 - Faunal and avifaunal species encountered during the site visit were however noted and discussed.

The **Site Ecological Importance (SEI)** of the assessment area was determined and discussed as per the tables below.

- The SEI of an area is considered to be a function of the Biodiversity Importance (BI) of the receptor (e.g. species of conservation concern, the vegetation/fauna community or habitat type present on the site) and its resilience to impacts, expressed as Receptor Resilience (RR).
 - $SEI = BI + RR$
- BI in turn, is a function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor
 - $BI = CI + FI$

Table 1: Criteria for CI calculations

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

Table 2: Criteria for FI calculations

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

Table 3: Criteria for BI calculations

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

Table 4: Criteria for RR calculations

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

Table 5: Criteria for SEI calculations

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

Table 6: Interpretation of SEI calculation results

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

- Significant watercourses and/or wetlands and/or other aquatic ecological features/habitats were identified, delineated and discussed as per the accepted methodology described below, if potentially found to be present within the assessment area.
 - For the purposes of this investigation a wetland was defined according to the definition in the National Water Act (Act 36 of 1998) as: “land which is transitional between terrestrial and aquatic systems, where the water table is usually at or near the surface, or the land is periodically covered with shallow water and which in normal circumstances, supports or would support vegetation typically adapted to life in saturated soil.”
 - In 2005 DWAF published a wetland delineation procedure in a guideline document titled “A Practical Field Procedure for the Identification and Delineation of Wetlands and Riparian Areas”. These guidelines contain a number of stipulations relating to the protection of wetlands and the undertaking of wetland assessments.
 - To delineate any wetland, the following criteria is used in accordance with the Department of Water Affairs (DWA): Updated manual for identification and delineation of wetlands and riparian areas, Edition 2 September 2008.
 - The wetland delineation procedure identifies the outer edge of the temporary zone of the wetland, which marks the boundary between the wetland and adjacent terrestrial areas. This constitutes the part of the wetland that might remain flooded or saturated close to the soil surface for only a few weeks in the year, but long enough to develop anaerobic conditions and determine the nature of the plants growing in the soil.
 - The guidelines also state that the locating of the outer edge of the temporary zone must make use of four specific indicators namely:
 - terrain unit indicator
 - soil form indicator
 - soil wetness indicator
 - vegetation indicator
 - In addition, the watercourse/wetland and a protective buffer zone beginning from the outer edge of the wetland temporary zone, was designated as sensitive in a sensitivity map. The guidelines stipulate buffers to be delineated around the boundary of a wetland. An adequate protective buffer zone, beginning from the outer edge of the wetland temporary zone, was implemented and designated as sensitive within which no development must be allowed to occur.
- Georeferenced photographs were taken of any Red Data Species Listed-, nationally- or provincially protected plant species, ecologically sensitive/conservationally significant areas as well as significant watercourses and/or wetlands and/or other aquatic ecological features/habitats, if encountered within the assessment area. This was done in order to indicate their specific locations in a Geographic Information System (GIS) mapping format.

The **Present Ecological State (PES)** of all significant aquatic features/habitats identified within the assessment area, was determined and discussed as per the table below.

- The Present Ecological State (PES) refers to the current state or condition of an area in terms of all its characteristics and reflects the change to the area from its reference condition. The value gives an indication of the alterations that have occurred in the ecosystem.

Table 7: Criteria for PES calculations

PES Category	Score	Description
A	0 – 0.9 > 90 - 100%	Unmodified , natural and pristine.
B	1 – 1.9 > 80 - 90%	Largely natural . A small change in natural habitats and biota may have taken place but the ecosystem functionality has remained essentially unchanged.
C	2 – 3.9 > 60 - 80%	Moderately modified . Moderate loss and transformation of natural habitat and biota have occurred, but the basic ecosystem functionality has still remained predominantly unchanged.
D	4 – 5.9 > 40 - 60%	Largely modified . A significant loss of natural habitat, biota and subsequent basic ecosystem functionality has occurred.
E	6 – 7.9 > 20 - 40%	Seriously modified . The loss of natural habitat, biota and basic ecosystem functionality is extensive.
F	8 – 10 0 - 20%	Critically/Extremely modified . Transformation has reached a critical level and the ecosystem has been modified completely with a virtually complete loss of natural habitat and biota. The basic ecosystem functionality has virtually been destroyed and the transformation is irreversible.

The **Ecological Importance and Sensitivity (EIS)** of all significant aquatic features/habitats identified within the assessment area, was determined and discussed as per the table below.

- The Ecological Importance and Sensitivity (EIS) of an area is an expression of its importance to the maintenance of ecological diversity and functioning on local and wider scales. Both abiotic and biotic components of the system are taken into consideration. Sensitivity refers to the system's ability to resist disturbance and its capability to recover from disturbance, once it has occurred.

Table 8: Criteria for EIS calculations

EIS Category	Score	Description
D	≤ 1.0	Low/Marginal. Not ecologically important and/or sensitive on any scale. Biodiversity is ubiquitous and not unique or sensitive to habitat modifications.
C	1.1 - 2	Moderate. Ecologically important and sensitive on local or possibly provincial scale. Biodiversity is still relatively ubiquitous and not usually sensitive to habitat modifications.
B	2.1 - 3	High. Ecologically important and sensitive on provincial or possibly national scale. Biodiversity is relatively unique and may be sensitive to habitat modifications.
A	3.1 - 4	Very High. Ecologically important and sensitive on national and possibly international scale. Biodiversity is very unique and sensitive to habitat modifications.

The **Recommended Ecological Category (REC)** of all significant aquatic features/habitats identified within the assessment area, was determined and discussed as per the table below.

- The Recommended Ecological Category (REC) of an area is an expression of the ecological category, within which it is recommended for a water resource to be managed. In the event of a high EIS value, the management objective should constitute improvement of the water resource condition. In the event of a medium or low EIS value, the management objective should constitute maintenance of the current water resource condition. The PES value however also bears relevance in determining a feasible REC value.

PES Category	EIS Category			
	Very High	High	Moderate	Low
A	A - Maintain	A - Maintain	A - Maintain	A - Maintain
B	A - Improve	A/B - Improve	B - Maintain	B - Maintain
C	B - Improve	B/C - Improve	C - Maintain	C - Maintain
D	C - Improve	C/A - Improve	D - Maintain	D - Maintain
E	D - Improve	D - Improve	D - Improve	D - Improve
F	D - Improve	D - Improve	D - Improve	D - Improve

4. Assessment Area

The assessment area constitutes a single combined footprint area of approximately 28.9 ha in size. The assessment area is situated on the Remaining Extents of the Farms Vlak Fontein No. 332 and Bloemspruit B No. 2232 (SG 21 Digit Codes: F00300000000033200000 and F003000000000223200000), within the suburb of Bloemspruit. The suburb forms part of the city of Bloemfontein, Free State Province. The city forms part of the Mangaung Metropolitan Municipality. According to the information received from the EAP, the assessment area falls within the municipal urban edge. Access to the assessment area is obtained by way of Springbok Street, from the south.

See locality map below (see A3 sized map in the Appendices).



Figure 1: Locality map illustrating the assessment area

4.1. Climate

The rainfall of the region peaks during the summer months and the Mean Annual Precipitation (MAP) of the area is approximately 548 mm (www.climate-data.org). The maximum average monthly temperature is approximately 22.7°C in the summer months while the minimum average monthly temperature is approximately 8.3°C during the winter (www.climate-data.org). Maximum daily temperatures can reach up to 30.3°C in the summer months and dip to as low as -0.5°C during the winter (www.climate-data.org).

4.2. Geology and Soils

According to Mucina & Rutherford (2006) the geology of the landscape and associated vegetation types can be described as the following:

Ca and Ae land types are nearly equally represented. Sedimentary mudstones and sandstones mainly of the Adelaide subgroup (part of the Beaufort Group) are mostly present and dominate the area. Soil types mainly include forms such as Hutton, Bainsvlei & Bloemdal.

4.3. Vegetation Type and Conservation Status

Vegetation Type

According to SANBI (2006-2019), the entire assessment area falls within the Bloemfontein Dry Grassland vegetation type (Gh 5), which is characterised by slightly undulating bottomland landscape covered with tall, dense grassland (SANBI, 2006-2019). Alternating patches of karroid scrub occur, especially over calcrete (SANBI, 2006-2019). This vegetation type is classified as Near Threatened (SANBI, 2006-2019).

Conservation Status

The entire assessment area and broader surrounding landscape is categorised as Degraded land, according to the Free State Provincial Spatial Biodiversity Plan (Collins, 2019), which sets out biodiversity priority areas in the province.

See vegetation type- and conservation status maps below (see A3 sized maps in the Appendices).

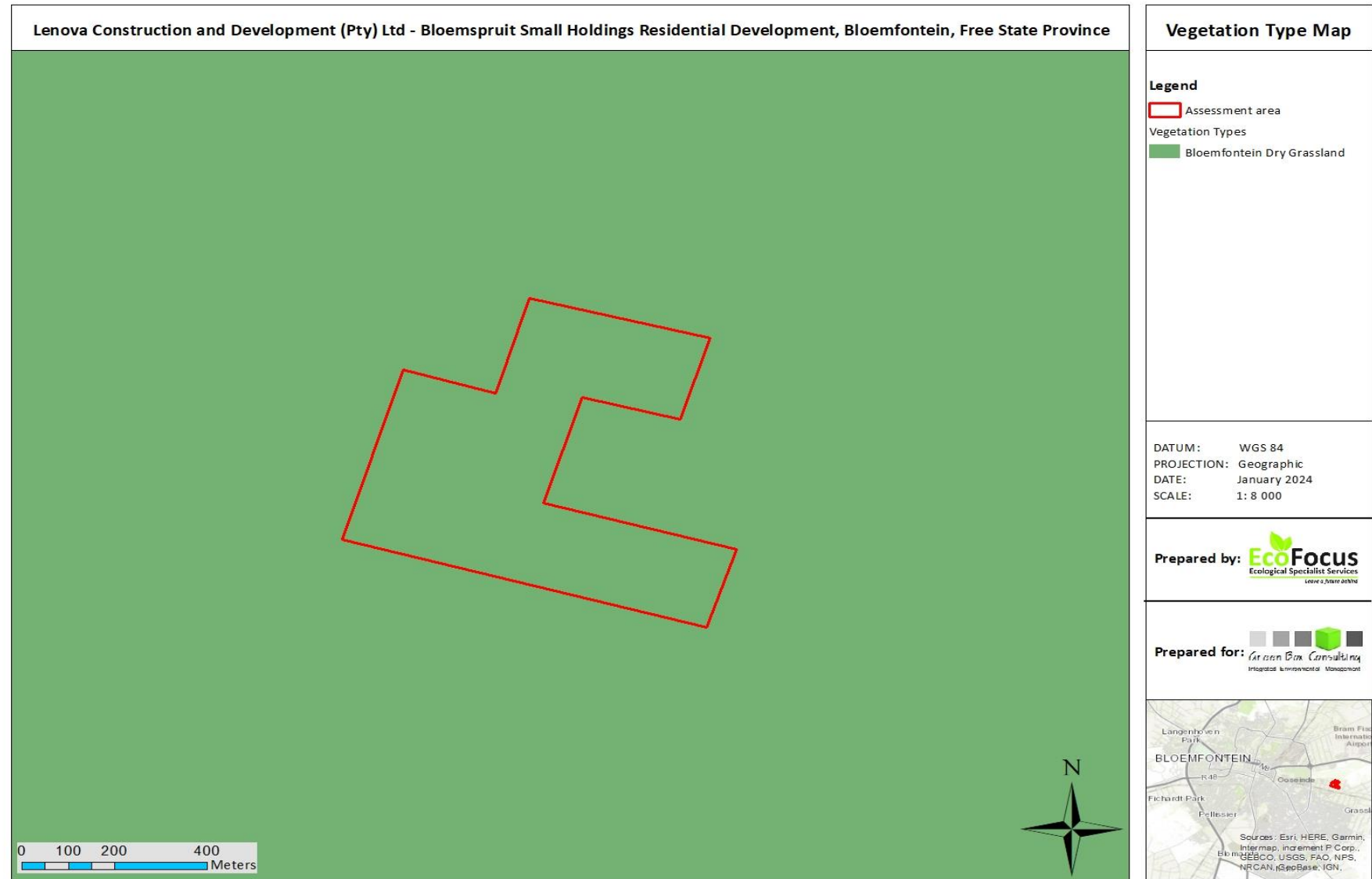


Figure 2: Vegetation type map illustrating the vegetation type associated with the assessment area

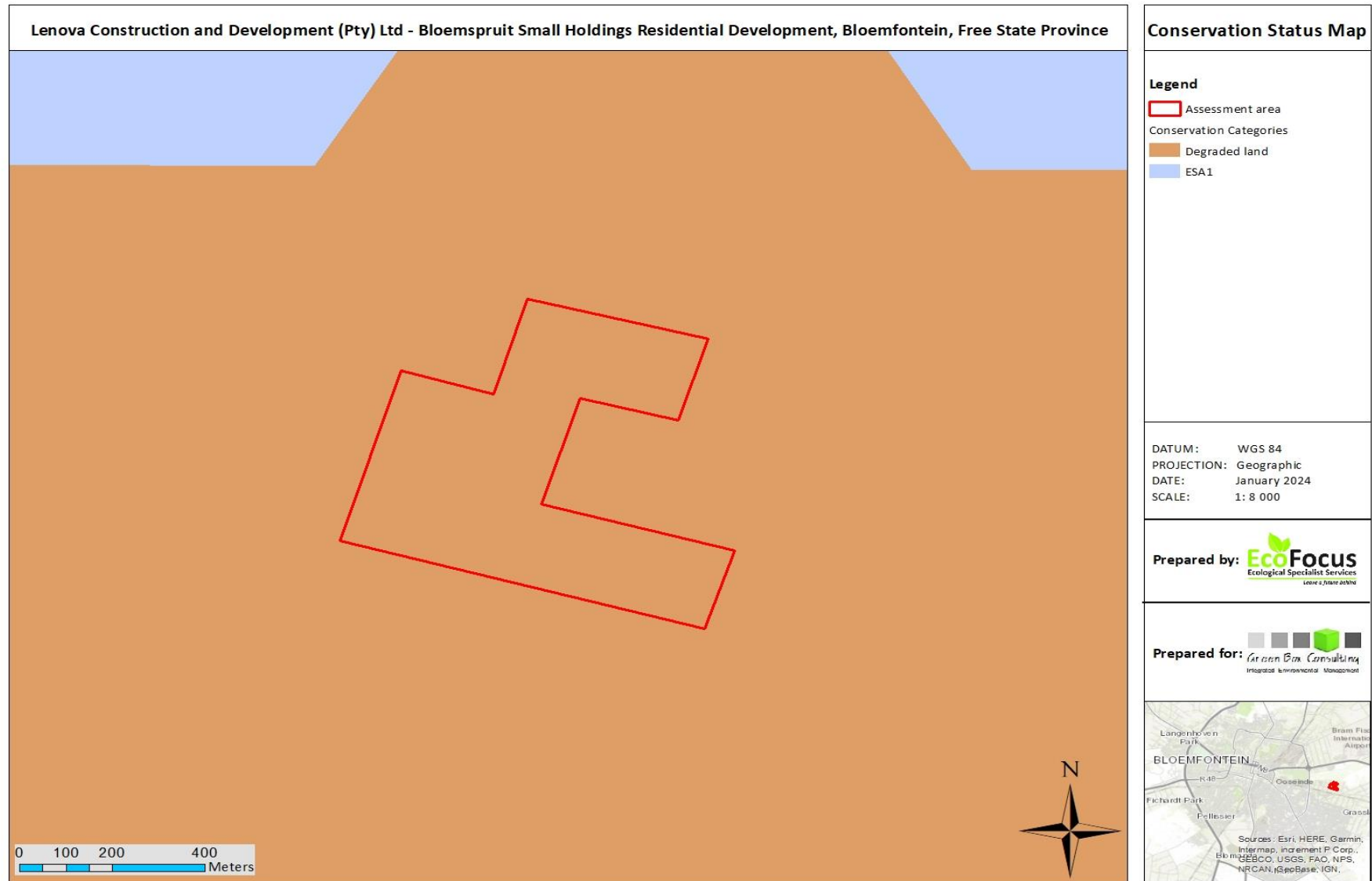


Figure 3: Conservation status map illustrating the conservation status/category associated with the assessment area

5. Assumptions, Uncertainties and Gaps in Knowledge

Various assumptions need to be made during the assessment process, at the hand of the relevant specialist. It is therefore assumed that:

- all relevant project information provided to the ecological specialist by the EAP, was correct and valid at the time that it was provided.
- the proposed development area as provided by the EAP, is correct and will not be significantly deviated from, as this was the only area assessed.
- strategic level investigations undertaken by the applicant prior to the commencement of the Basic Assessment process, determined that the proposed development area represents a potentially suitable and technically acceptable location.
- the public, local communities, relevant organs of state and surrounding landowners will receive a sufficient reoccurring opportunity to participate and comment on the proposed development during the Basic Assessment process, through the provision of adequately facilitated public participation interventions and timeframes as stipulated in the NEMA: EIA Regulations, 2014.
- the need and desirability of the proposed development is based on strategic national, provincial and local plans and policies, which reflect the interests of both statutory and public viewpoints.
- the BA process is a project-level framework and the specialists are limited to assessing the anticipated environmental impacts, associated with the construction- and subsequent operational phases of the proposed development.
- it is assumed that strategic level decision making by the relevant authorities will be conducted through cooperative governance principles, with the consideration of environmentally sustainable and responsible development principles underpinning all decision making.

Given that a BA involves prediction, the uncertainty factor forms part of the assessment process. Two types of uncertainty are associated with the BA process, namely process-related and prediction-related.

- Uncertainty of prediction is critical at the data collection phase as observations, recommendations and conclusions are made, solely based on professional specialist opinion. Final certainty will only be obtained upon actual implementation of the proposed development. Adequate research, specialist experience and expertise should however minimise this uncertainty.
- Uncertainty of relevant decision making relates to the interpretation of provided information by relevant authorities during the BA process. Continual two-way communication and coordination between EAP's and relevant authorities should however decrease the uncertainty of subjective interpretation. The importance of widespread/comprehensive consultation towards minimising the risk/possibility of omitting significant information and impacts is further stressed. The use of quantitative impact significance rating formulas (as utilised in this document) can further standardise the objective interpretation of results and limit the occurrence and scale of uncertainty and subjectivity.
- The principle of human nature provides for uncertainties and unpredictability with regards to the socio-economic impacts of the proposed developments and the subsequent public reaction/opinion, which will be received during the Public Participation Process (PPP).

Gaps in knowledge can be attributed to:

- The ecological assessment process was undertaken prior to the availing of certain information, which would only be derived from the final development design and layout. The design layout for the proposed development, had not been finalised yet at the time of the ecological assessment.
- Extensive existing residential and historical small-holding homestead transformation as well as historical agricultural cropland cultivation, is evident throughout the local and broader surrounding landscape. The surrounding landscape is furthermore also highly fragmented, from an ecological perspective.
- The potential for future similar developments in the same geographical area, which could lead to further cumulative impacts, cannot be meaningfully anticipated. It is however highly likely that further similar residential development and subsequent transformation would take place throughout the local area, over time.

EcoFocus Consulting is an independent ecological specialist company. All information and recommendations as per this report are therefore provided in a fair and unbiased/objective manner and are solely based on qualitative data gathered as well as professional specialist observation and opinion.

6. Site Sensitivity Verification

6.1. Proposed Development Area Clearance

The assessment area constitutes a single combined footprint area of approximately 28.9 ha in size. The mechanical clearance associated with the proposed development, will in all probability completely transform the majority of the existing surface vegetation throughout the footprint area.

6.2. Aquatic Environment

6.2.1. Water Catchment and Drainage

The assessment area falls within the Upper Orange Water Management Area (WMA 13) and the associated C52F quaternary surface water catchment- and drainage area. It is furthermore situated in the C52F – 3752 Sub Quaternary Reach (SQR), within the Highveld Ecoregion (11). The assessment area and surrounding landscape generally constitutes a reasonably flat to slightly sloping landscape, towards the north.

6.2.2. Watercourse Baseline Information

There are no significant watercourses within the vicinity of the assessment area. According to the National Freshwater Ecosystem Priority Areas Database (NFEPA, 2011), the portion of the C52F – 3752 Sub Quaternary Reach (SQR) associated with the assessment area, does not fall within any Freshwater Ecosystem Priority Area (FEPA), Fish Support Area, -Sanctuary, -Corridor or - Rehabilitation Area. No populations of conservationally significant threatened fish species have been recorded throughout the assessment area or local downstream region or are expected to specifically utilise the assessment area as refuge or for breeding, foraging and/or persistence purposes.

See water catchment and drainage map below (see A3 sized maps in the Appendices).

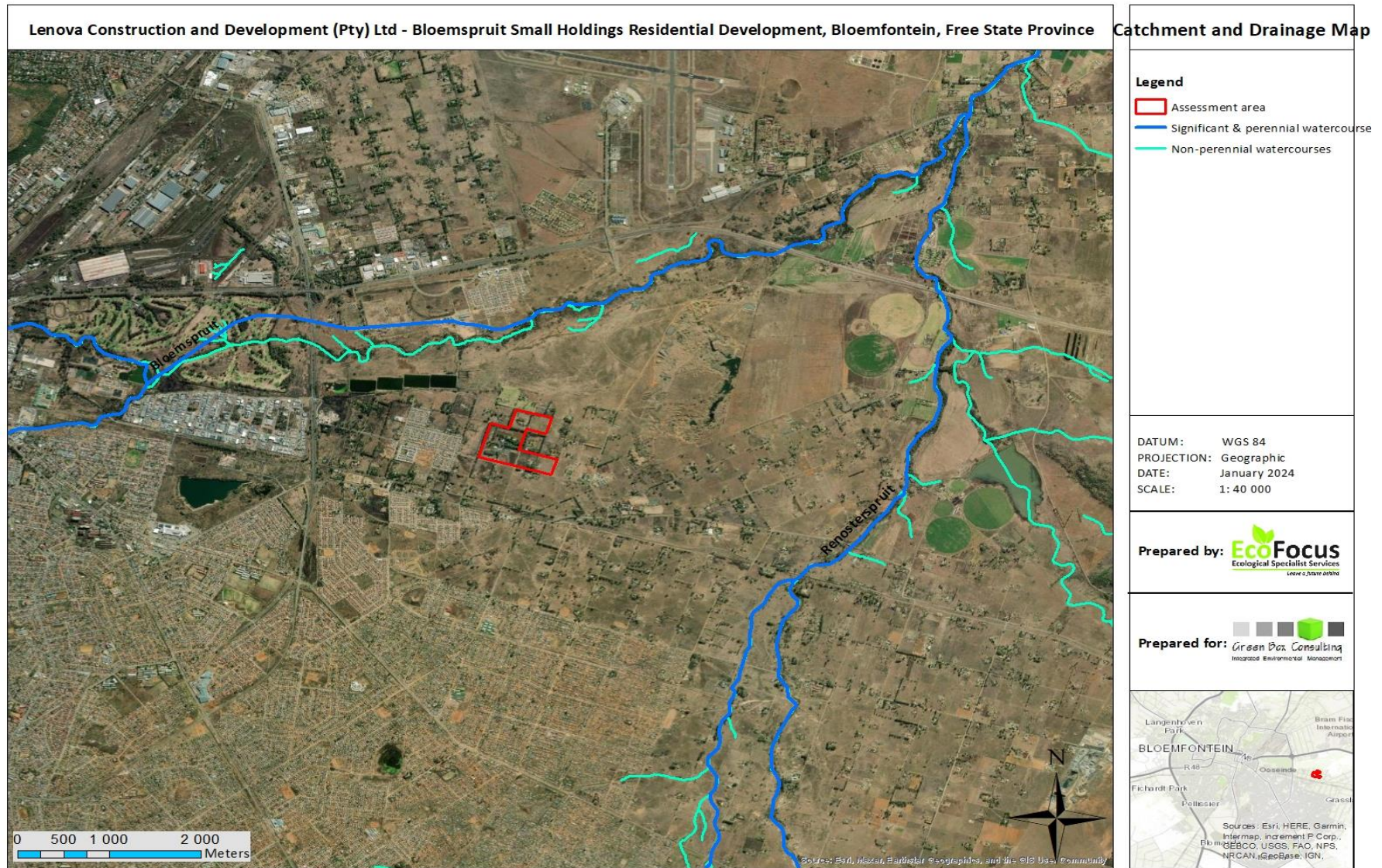


Figure 4: Water catchment and drainage map illustrating the broader surface water catchment- and drainage surrounding the assessment area

6.2.3. Wetlands and Artificially Wet Areas

A significantly sized depression wetland is present directly adjacent south of the assessment area. A small historical portion of the wetland is in fact situated within the south-eastern corner of the assessment area. The long-term presence of an elevated tarred road that runs along the southern boundary of the assessment area (east-west) and perpendicularly across the wetland, has however virtually completely blocked and cut off any historically consistent seasonal supply of surface runoff water to this historical wetland portion. The majority of the wetland has therefore been- and will continue to be dammed up to the south of the road during significant seasonal rainfall events, for the long-term.

The historical wetland portion was also historically cultivated for agricultural cropland purposes. The portion therefore possesses no wetland ecological features or habitat attributes and rather constitutes a moderately disturbed terrestrial grassland habitat. It is therefore not viewed as being of any long-term conservational significance/value for wetland habitat preservation or ecological functionality, -integrity or -services provision. The grassland habitat is mainly dominated by the robust/resilient Increaser 2 type grass species *Eragrostis spp.* and to a lesser extent *Panicum coloratum* and *Cynodon dactylon* (Van Oudtshoorn, 2004). The exotic forb species *Phyla nodiflora* is also well-represented. This dominance of hardy Increaser 2 type grass species as well as exotic forb species along with the virtually complete absence of desired palatable Decreaser type climax grass species (Van Oudtshoorn, 2004), confirms the disturbed ecological and terrestrial state of the historical wetland portion.



Figure 5: Image illustrating the presence of the small historical wetland portion, which is situated within the south-eastern corner of the assessment area; the presence of the moderately disturbed terrestrial grassland habitat is also evident

The majority dammed-up portion of the wetland (Wetland Assessment Unit) mainly houses locally distinct semi-aquatic grassland and sedgeland habitat and to a lesser extent also transitional terrestrial grassland. Significant portions of the wetland were however historically cultivated for agricultural cropland purposes. In spite of the historical cultivation activities, the ecological condition of the wetland appears to have recovered reasonably over time. The wetland is however still in a slight to moderately disturbed ecological state due to the highly fragmented state of the surrounding landscape caused by the extensive existing residential and historical small-holding homestead transformation along with the continued anthropogenic activity and disturbance throughout the area. Due to the long-term damming up of the area during significant seasonal rainfall events, it is furthermore also evident from a hydrological perspective, that the wetland does not form an important component of the local and broader quaternary surface water catchment- and drainage area, towards the north.

The semi-aquatic habitat is mainly dominated by the hydrophytic grass species *Eriochloa fatmensis*, *Arundinella nepalensis* and *Eragrostis plana* as well as the sedge species *Cyperus denudatus* and *C sphaerospermus*. The hydrophytic grass species *Echinochloa holubii* and *Diplachne fusca* as well as the transitional grass species *Themeda triandra*, *Eragrostis curvula*, *Setria sphacelata* and *Sporobolus spp.* were also found to be present but to a lesser extent. Small isolated patches of the sedge species *Typha capensis* and *Juncus effusus* were merely found to be very sparsely present.

The exotic forb species *Phyla nodiflora* is also well-represented throughout the wetland, while the forb species *Lactuca serriola*, *Senecio consanguineus* and *Dipcadi viride* were also found to be present but to a lesser extent.



Figure 6: Image illustrating an example of the slight to moderately disturbed semi-aquatic grassland and sedgeland habitat, associated with the majority dammed-up portion of the depression wetland



Figure 7: Image illustrating an example of the long-term damming up of the depression wetland during significant seasonal rainfall events, by the presence of the elevated tarred road that runs along the southern boundary of the assessment area (east-west) and perpendicularly across the wetland



Figure 8: Image illustrating an example of the slight to moderately disturbed transitional terrestrial grassland, to a lesser extent associated with the majority dammed-up portion of the depression wetland

Faunal and floral species conservation

No Red Data Listed-, nationally protected- or provincially protected aquatic plant species or any other aquatic plant species of conservational significance/value, were found to be present throughout the wetland.

No conservationally significant or important avifaunal species/nests or other -faunal species were observed throughout the wetland, during the site assessment. Only common local resident bird species were found to be present. Due to the fragmented as well as disturbed ecological state of the wetland and surrounding landscape along with the continued anthropogenic activity and disturbance, it is also unlikely that the wetland would specifically be utilised by any conservationally significant or important aquatic faunal or avifaunal species as refuge or for breeding, foraging and/or persistence purposes.

It is therefore evident from an aquatic faunal biodiversity perspective, that the wetland does not form an important part of the aquatic ecology of the area. The surrounding landscape is furthermore also highly fragmented, from an ecological perspective due to the extensive existing residential and historical small-holding homestead transformation as well as historical agricultural cropland cultivation. It is consequently not anticipated that the proposed development of the assessment area would pose any significant risk to- or impact on the aquatic faunal or avifaunal communities throughout the local or broader landscape.

Present Ecological State (PES)

Upstream catchment

The size of the upstream catchment area associated with the Wetland Assessment Unit, is approximately 511.7 ha. The Wetland Assessment Unit is mainly fed by surface water runoff. Substantial landcover transformation and associated historical and continued anthropogenic inputs/impacts are evident throughout the catchment. The following main landcovers contribute to the inputs/impacts of the catchment and consequently impact on the Present Ecological State (PES) of the Wetland Assessment Unit:

Table 9: Landcover table of the wetland upstream catchment

Landcover	Catchment Cover Percentages		
	200 m buffer zone surrounding the wetland	Broader catchment surrounding the 200 m buffer zones	Total catchment extent
Urban Residential – high density	00 %	65.76 %	63.10 %
Semi-natural	86.57 %	28.57 %	30.91 %
Urban Residential – low density	0.77 %	3.05 %	2.96 %
Urban Industrial/Commercial	4.69 %	1.45 %	1.58 %

In-wetland

The size of the Wetland Assessment Unit is approximately 13.6 ha. Substantial landcover transformation and associated historical and continued anthropogenic inputs/impacts are evident and virtually no natural/minimally impacted areas remain throughout the Wetland Assessment Unit. The following main in-wetland landcovers contribute to the inputs/impacts within the wetland and consequently impact on the Present Ecological State (PES) of the Wetland Assessment Unit:

Table 10: Landcover table of within the wetland

Landcover	Wetland Cover Percentages
Semi-natural (undrained)	97.06 %
Urban Industrial/Commercial	2.94 %

WET-Health Level 1B Assessment

Table 11: Present Ecological State (PES) Summary for the wetland

	Wetland PES Summary			
Wetland name	Project 07-2024 Bloemspruit Small Holdings Residential Development			
Assessment Unit	Depression wetland			
HGM type	Depression without flushing			
Wetland area (Ha)	13.6 Ha			
Final (adjusted) Scores				
PES Assessment	Hydrology	Geomorphology	Water Quality	Vegetation
Impact Score	3.6	2.0	1.5	4.2
PES Score (%)	64%	80%	85%	58%
Ecological Category	C	C	B	D
Trajectory of change	→	→	→	→
Confidence (revised results)	Medium	Medium	Medium	Medium
Combined Impact Score	2.9			
Combined PES Score (%)	71%			
Combined Ecological Category	C			
Hectare Equivalents	9.7 Ha			

The **Present Ecological State (PES)** of the Wetland Assessment Unit is classified as **Class C** as it is moderately modified. Moderate loss and transformation of natural habitat and biota have occurred, but the basic ecosystem functionality has still remained predominantly unchanged.

The vegetation assessment component of the wetland has been most severely impacted. In spite of the historical cultivation activities, the ecological condition of the wetland appears to have recovered reasonably favourably over time. The wetland is however still in a slight to moderately disturbed ecological state due to the highly fragmented state of the surrounding landscape caused by the extensive existing residential and historical small-holding homestead transformation along with the continued anthropogenic activity and disturbance throughout the area.

The hydrological assessment component of the wetland has also been significantly impacted by the extensive presence of Urban Residential – high density transformation as well as the extensive road networks throughout the upstream catchment of the wetland.

Ecological Importance and Sensitivity (EIS)

WET-EcoServices Assessment

Table 12: Ecological Importance (EI) Summary for the wetland

		Present State			
ECOSYSTEM SERVICE		Supply	Demand	Importance Score	Importance
REGULATING AND SUPPORTING SERVICES	Flood attenuation	0.0	0.0	0.0	Very Low
	Stream flow regulation	0.0	0.0	0.0	Very Low
	Sediment trapping	1.0	0.0	0.0	Very Low
	Erosion control	1.6	0.7	0.5	Very Low
	Phosphate assimilation	1.0	0.0	0.0	Very Low
	Nitrate assimilation	0.9	0.0	0.0	Very Low
	Toxicant assimilation	1.0	0.0	0.0	Very Low
	Carbon storage	0.7	2.7	0.6	Very Low
	Biodiversity maintenance	1.4	0.0	0.0	Very Low
PROVISIONING SERVICES	Water for human use	1.5	0.0	0.0	Very Low
	Harvestable resources	0.0	0.3	0.0	Very Low
	Food for livestock	4.0	0.3	2.7	Moderately High
	Cultivated foods	2.1	0.0	0.6	Very Low
CULTURAL SERVICES	Tourism and Recreation	0.0	0.0	0.0	Very Low
	Education and Research	0.0	0.0	0.0	Very Low
	Cultural and Spiritual	0.0	0.0	0.0	Very Low

Table 13: Wetland Importance and Sensitivity

Project 07-2024 Bloemspruit Small Holdings Residential Development	
	Importance
ECOLOGICAL IMPORTANCE & SENSITIVITY	1.3
HYDRO-FUNCTIONAL IMPORTANCE	0.3
DIRECT HUMAN BENEFITS	0.1
Overall Importance and Sensitivity Score	1.3
Overall Importance and Sensitivity Category	D

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The **Ecological Importance and Sensitivity (EIS)** of the Wetland Assessment Unit is classified as **Class D (Low/Marginal)** as it is merely viewed as being slightly ecologically important and/or sensitive on local scale. It is consequently merely viewed as being of low overall long-term conservational significance/value for wetland habitat preservation as well as ecological functionality, -integrity and -services provision.

Reasoning:

The importance of ecological services provided by the Wetland Assessment Unit is very low, relative to that supplied by other similar wetlands. This is due to the Wetland Assessment Unit being in a slight to moderately disturbed ecological state, as a result of the highly fragmented state of the surrounding landscape caused by the extensive existing residential and historical small-holding homestead transformation along with the continued anthropogenic activity and disturbance throughout the area. Substantial landcover transformation within the catchment and associated historical and continued anthropogenic inputs/impacts, also contribute to the disturbed ecological state.

Recommended Ecological Category (REC)

The **Recommended Ecological Category (REC)** of the Wetland Assessment Unit is classified as **Class C - Maintain**.

A number of significantly sized artificially wet areas are present to the south of- as well as along the western boundary of the assessment area. These areas have however formed solely as a result of a combination of constant medium-term artificial upstream surface water supply, either from leaking pipelines, overflowing boreholes and/or -manholes as well as anthropogenic damming up by the same elevated tarred road as discussed earlier for the wetland.

Although these areas house a degree of wetland habitat attributes, which is visibly utilised by various common/general- and possibly also habitat-specific aquatic bird-, amphibian- and other aquatic faunal species, they have solely formed artificially in areas where no wetlands existed previously. The semi-aquatic habitat is also not viewed as being sustainable in the long-term as the water supply sources can and should in actual fact have been repaired by the municipality, immediately or at least as soon as practicably/reasonably possible after the issues occurred. Once this occurs, it will result in the complete and permanent regression and eventual disappearance of the current semi-aquatic habitat. The artificially wet areas are therefore not viewed as being of any overall long-term conservational significance/value for habitat preservation or continued ecological functionality and -integrity persistence in support of the surrounding ecosystem, broader vegetation type or aquatic faunal and -avifaunal habitats.



Figure 9: Image illustrating an example of the artificially wet areas which have formed to the south of- as well as along the western boundary of the assessment area

6.3. Terrestrial Environment

6.3.1. Current Existing Vegetation and Site Description

The entire assessment area consists of a fragmented mosaic of mainly old historical agricultural cropland cultivation and to a lesser extent, old small-holding homestead transformation with dilapidated building infrastructure. No undeveloped natural habitat remains throughout the assessment area.

The old historically cultivated cropland portions mainly constitute medium-height terrestrial forb- and grassland habitat, which is overwhelmingly dominated by opportunistic pioneer- grass and weed species. These portions are therefore in a highly disturbed and degraded ecological state and possess virtually no ecological/conservational value/significance.

The grass layer is mainly dominated by the by the robust/resilient Increaser 2 type grass species *Cynodon dactylon* and to a lesser extent *Eragrostis spp.* (Van Oudtshoorn, 2004), while the grass species *Digitaria eriantha* (old planted pastures), *Urochloa mosambicensis*, *Brachiaria serrata*, *Tragus berteronianus* and *Paspalum spp.* were also found to be well-represented. The grass species *Aristida bipartita*, *Setaria spp.*, *Panicum coloratum*, *Sporobolus spp.*, *Poa annua* and patches of *Pennisetum clandestinum* (exotic) were also found to be present but to a lesser extent. The desired palatable Decreaser type climax grass species *Themeda triandra* (Van Oudtshoorn, 2004) was merely found to be very sparsely present throughout the historical cropland portions.

Although a well-represented forb layer is evident, it does not possess high species diversity. This is most likely as a result of the disturbed and degraded ecological state of the area. The forb layer is overwhelmingly dominated by the opportunistic pioneer- and weed species *Dysphania ambrosioides*, *Nidorella anomala* and *Sphaeralcea bonariensis*, while the species *Tagetes minuta*, *Conyza bonariensis*, *Pseudognaphalium luteo-album*, *Bidens bipinnata*, *Gomphrena celosioides*, *Phyla nodiflora* and *Schkuhria pinnata* were also found to be well-represented. The forb species *Selago densiflora*, *Verbena aristigera*, *Dipcadi viride*, *Plantago lanceolata*, *Oenothera rosea* and *Salvia runcinata* as well as the legally declared alien invasive species *Verbena bonariensis*, *Datura stramonium*, *Cirsium vulgare* and *Cestrum laevigatum* (all Category 1b) were also found to be present but to a lesser extent. The succulent species *Ruschia hamata* was merely found to be very sparsely present throughout the historical cropland portions. More underground bulb-plant species (geophytes) could however potentially be present throughout the grassland habitat, which were not necessarily visible aboveground due to the timing of the site assessment

This overwhelming dominance of hardy Increaser 2 type grass species as well as opportunistic pioneer- and weed species along with the merely very sparse representation of desired palatable Decreaser type climax grass species (Van Oudtshoorn, 2004), confirms the disturbed and degraded ecological state of the historical cropland portions.



Figure 10: Three images illustrating examples of the highly disturbed and degraded medium-height terrestrial grass- and forbland habitat, associated with the old historically cultivated cropland portions, which is overwhelmingly dominated by opportunistic pioneer- grass and weed species

The old small-holding homestead transformed portions are in a highly disturbed and degraded ecological state, mainly as a result of the historical anthropogenic activity and management. Old dilapidated building infrastructure as well as domestic waste/garbage and building rubble dumping, is extensively evident throughout these portions. Dense clusters of trees and shrubs (mostly anthropogenically planted exotic and invasive species) are also extensively present throughout the old homestead portions, which served ornamental, fruit consumption and/or shading purposes.

The dense tree and shrub clusters are mainly dominated by the legally declared alien invasive species *Melia azedarach* (Category 3 in urban areas), *Morus alba* (Category 3), *Pinus pinaster*, *Gleditsia triacanthos*, *Ailanthus altissima*, *Caesalpinia gilliesii*, *Opuntia ficus-indica* (all Category 1b), *Prunus persica*, *Brachychiton discolor*, *Cupressus macrocarpa* (all exotic), *Searsia lancea*, *Vachellia karroo* and *Asparagus laricinus* (all indigenous). A single individual of the provincially protected tree species *Olea europaea* was also found to be present throughout the old homestead portions.

The legally declared alien invasive forb species *Cestrum laevigatum* and *Canna indica* (both Category 1b) were also found to be moderately present throughout the old homestead portions.

Linear tree windrows consisting of the legally declared alien invasive species *Pinus pinaster* (Category 1b) and *Eucalyptus spp.* (exotic but not invasive due to their presence within an urban area and their substantial trunk diameters) are furthermore also extensively established around the outer perimeters and internal divisions of the majority of the small-holdings and historical cropland portions throughout the assessment area.



Figure 11: Three images illustrating examples of the highly disturbed and degraded old small-holding homestead transformed portions; the old dilapidated building infrastructure as well as the dense clusters of trees and shrubs (mostly anthropogenically planted exotic and invasive species) are also evident

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Figure 12: Three images illustrating the presence of linear tree windrows, which are extensively established around the outer perimeters and internal divisions of the majority of the small-holdings and historical cropland portions throughout the assessment area

6.3.2. Floral Species Conservation

A single individual of the provincially protected tree species *Olea europaea* was found to be present throughout the old homestead portions.

No Red Data Listed-, nationally protected- or other provincially protected plant species or any other plant species of conservational significance/value, were found to be present throughout the assessment area.

More underground bulb-plant species (geophytes) could however potentially be present throughout the grassland habitat, which were not necessarily visible aboveground due to the timing of the site assessment.

Due to the fragmented as well as highly disturbed and degraded ecological state of the entire assessment area, the assessment area is therefore not in any way representative/reminiscent of the relevant Bloemfontein Dry Grassland vegetation type (Gh 5), which virtually completely negates the conservational significance of the area. The assessment area also does not house any locally distinct or conservationally important habitat features or plant species communities or -populations. The surrounding landscape is furthermore also highly fragmented, from an ecological perspective due to the extensive existing residential and historical small-holding homestead transformation as well as historical agricultural cropland cultivation. It is consequently not anticipated that the proposed development of the assessment area would pose any significant risk to achieving and maintaining national and/or provincial conservation- and persistence targets of the area or to the continued ecological functionality and -integrity of the local surrounding landscape.

6.4. Fauna and Avifauna

The assessment area does not fall within any Important Bird Areas (IBA) as per the latest IBA map obtained from the Birdlife SA website (<https://www.birdlife.org.za/what-we-do/important-bird-and-biodiversity-areas/media-and-resources/#1553597171790-6f83422a-a731>). No conservationally significant or important avifaunal species/nests or other -faunal species were observed throughout the assessment area or specifically within any of the dense tree and shrub clusters or linear tree windrows, during the site assessment. These clusters and windrows however provide woody habitat, which is visibly utilised by various common/general bird species as refuge and for breeding, foraging and/or persistence purposes. Only common local resident bird species and nests were therefore found to be present.

Due to the fragmented as well as disturbed and degraded ecological state of the assessment area along with the continued anthropogenic activity and disturbance, it is also unlikely that the assessment area would specifically be utilised by any conservationally significant or important faunal or avifaunal species as refuge or for breeding, foraging and/or persistence purposes. It is anticipated that such species would rather utilise the undisturbed surrounding natural landscape away from the city. The mobility of faunal/avifaunal species allows for individuals to simply leave an area where disturbance is taking place and relocate to surrounding similar, adequate areas.

It is therefore evident from a faunal biodiversity perspective, that the assessment area does not form an important part of the ecology of the area. The surrounding landscape is furthermore also highly fragmented, from an ecological perspective due to the extensive existing residential and historical small-holding homestead transformation as well as historical agricultural cropland cultivation. It is consequently not anticipated that the proposed development of the assessment area would pose any significant risk to- or impact on the faunal or avifaunal communities throughout the local or broader landscape.

6.5. Site Ecological Importance (SEI)

The Site Ecological Importance (SEI) of the assessment area is classified as **very low** as it is not viewed as being ecologically important and/or sensitive on any scale. Minimisation mitigation - development activities of medium to high impact acceptable and restoration activities may not be required.

The assessment area is not viewed as being of any overall long-term conservational significance/value for habitat preservation or continued ecological functionality and -integrity persistence in support of the surrounding ecosystem, broader vegetation type or faunal and avifaunal habitats.

Reasoning:

Due to the fragmented as well as highly disturbed and degraded ecological state of the entire assessment area, the assessment area is therefore not in any way representative/reminiscent of the relevant Bloemfontein Dry Grassland vegetation type (Gh 5), which virtually completely negates the conservational significance of the area. The assessment area also does not house any locally distinct or conservationally important habitat features or plant species communities or -populations. The surrounding landscape is furthermore also highly fragmented, from an ecological perspective due to the extensive existing residential and historical small-holding homestead transformation as well as historical agricultural cropland cultivation. It is consequently not anticipated that the proposed development of the assessment area would pose any significant risk to achieving and maintaining national and/or provincial conservation- and persistence targets of the area or to the continued ecological functionality and -integrity of the local surrounding landscape.

It is evident from a faunal biodiversity perspective, that the assessment area does not form an important part of the ecology of the area. The surrounding landscape is furthermore also highly fragmented, from an ecological perspective due to the extensive existing residential and historical small-holding homestead transformation as well as historical agricultural cropland cultivation. It is consequently not anticipated that the proposed development of the assessment area would pose any significant risk to- or impact on the faunal or avifaunal communities throughout the local or broader landscape.

6.6. Environmental Screening Tool Report Biodiversity Theme Sensitivity Ratings

Plant Species Biodiversity Theme

According to the Environmental Screening Tool Report, the Plant Species Biodiversity Theme of the assessment area is rated as being of 'low sensitivity'. Based on the outcomes and results of the site assessment, the specialist is in agreement with this rating.

Animal Species Biodiversity Theme

According to the Environmental Screening Tool Report, the Animal Species Biodiversity Theme of the assessment area is rated as being of 'medium sensitivity' for the potential presence of the Globally Near Threatened Red Listed mammalian species *Hydricis maculicollis* (Spotted-necked otter).

No individuals of this species were observed throughout the assessment area, during the site assessment. Due to the lack of suitable perennial aquatic habitat/watercourses throughout- or in close proximity to the assessment area required by this species, the realistic chance/possibility of this species potentially occurring throughout the assessment area is highly improbable. It is anticipated that this species would rather prefer to utilise the less disturbed aquatic habitat provided by the Bloem Spruit to the north.

Based on the outcomes and results of the site assessment, the specialist is therefore not in agreement with the 'medium' Animal Species Biodiversity Theme sensitivity ratings of the assessment area, but rather concludes that the assessment area is rated as 'low sensitivity'.

Aquatic Biodiversity Theme

According to the Environmental Screening Tool Report, the Aquatic Biodiversity Theme of the assessment area is rated as being of 'low sensitivity'. Based on the outcomes and results of the site assessment, the specialist is in agreement with this rating.

Terrestrial Biodiversity Theme

According to the Environmental Screening Tool Report, the Terrestrial Biodiversity Theme of the assessment area is rated as being of 'low sensitivity'. Based on the outcomes and results of the site assessment, the specialist is in agreement with this rating.

7. Ecological Site Sensitivity Map

The site sensitivity map below (see A3 sized map in the Appendices) illustrates the delineated depression wetland and artificially wet areas as well as the location of the identified single provincially protected tree species *Olea europaea* individual, throughout the assessment area.

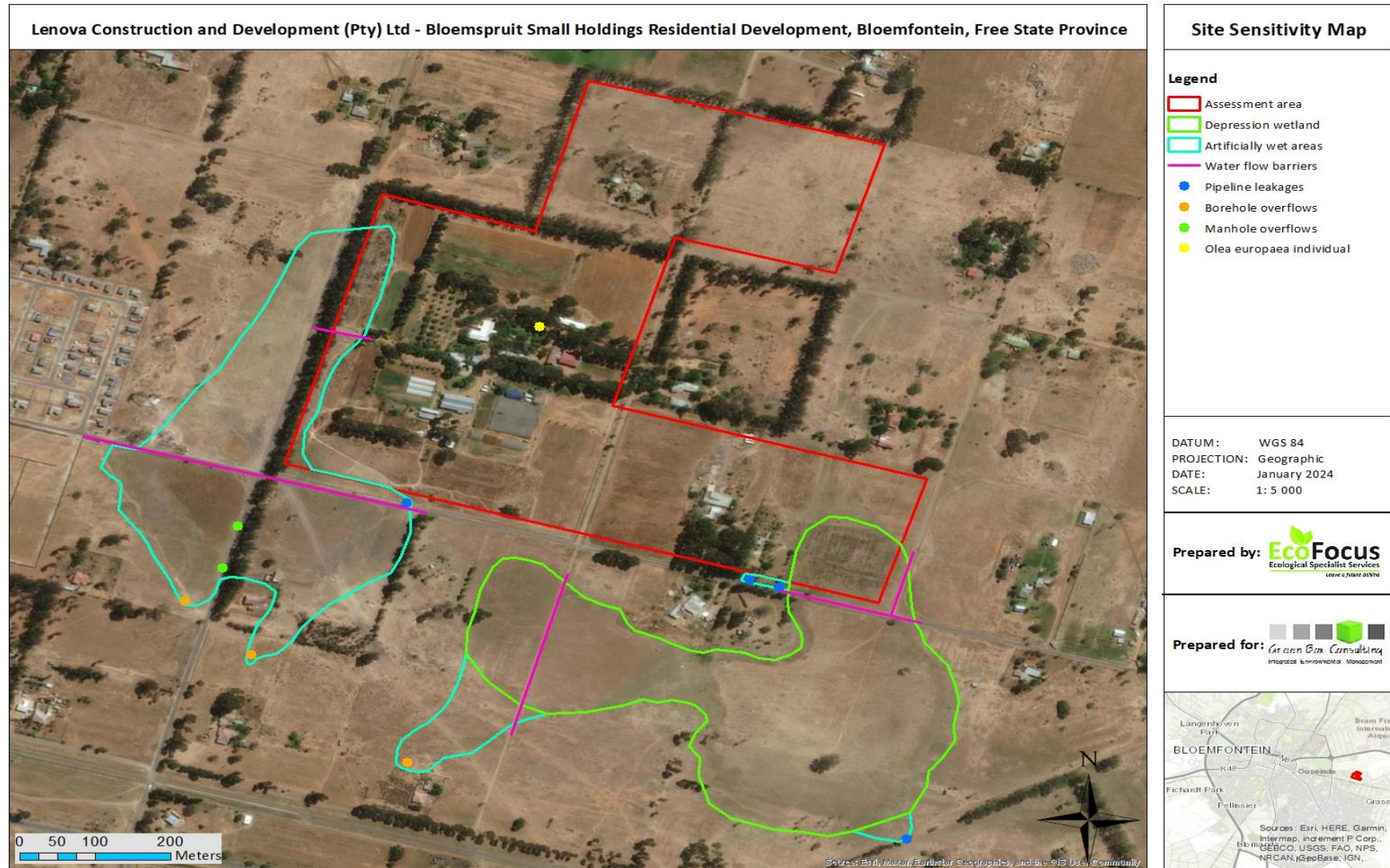


Figure 13: Site sensitivity map illustrating the delineated depression wetland and artificially wet areas as well as the location of the identified single provincially protected tree species *Olea europaea* individual, throughout the assessment area

8. Ecological Impact Management and Mitigation

The following main ecological impact management and mitigation measures are recommended for the proposed development:

- The proposed development footprint area must be kept as small as practicably possible to reduce the surface impact on surrounding vegetation and no unnecessary/unauthorised footprint expansion into the surrounding undeveloped landscape may take place.
- No site construction basecamps may be established within the surrounding undeveloped landscape.
- Adequately cordon off the proposed development construction footprint area and ensure that no construction activities, machinery or equipment operate or impact within the surrounding undeveloped landscape outside the cordoned off area.
- Adequate operational procedures for construction machinery and equipment must be developed in order to strictly govern and restrict movement of machinery only within the proposed development construction footprint area and to ensure environmentally responsible construction practices and activities.
- Existing roads and farm tracks in close proximity to the proposed development construction footprint area, must be used during the construction phase. No new temporary roads or tracks may be constructed or implemented through the surrounding undeveloped landscape.
- Disturbed areas within and immediately surrounding the proposed development construction footprint area must be adequately rehabilitated as soon as practicably possible after construction. A Rehabilitation Management Plan must be compiled by a suitably qualified and experienced ecologist.
- Due to the fragmented as well as disturbed ecological state of the wetland and surrounding landscape along with the continued anthropogenic activity and disturbance, it is not deemed necessary for a Water Quality- or Biodiversity Buffer to be implemented around the wetland. The majority of the wetland has already been- and will continue to be dammed up to the south of the road during significant seasonal rainfall events, for the long-term. As the historical wetland portion is not viewed as being of any long-term conservational significance/value for wetland habitat preservation or ecological functionality, -integrity or -services provision, it is the opinion of the specialist that the proposed development of this portion may take place.

- Immediate steps must be taken by the Mangaung Metropolitan Municipality to repair the relevant leaking pipelines and overflowing manholes.
- A Provincial Flora Permit has to be obtained from the Free State Department: Economic, Small Business Development, Tourism and Environmental Affairs (competent authority), prior to the commencement of any construction activities and the subsequent potential removal/destruction of the identified single provincially protected tree species *Olea europaea* individual.
- It is recommended that an additional ecological walkthrough be conducted during the flowering period of underground bulb plant species, prior to the commencement of the proposed development. This will ensure that no conservationally significant plant species have potentially been omitted.
- It is recommended that a rapid Avifaunal Ecological Walkthrough be conducted of the tree and shrub clusters as well as the linear tree windrows, prior to the potential cutting down of any tree- or shrub individuals. This must be done in order to ensure that no raptor- or any other conservationally significant or important avifaunal nests containing eggs or chicks are present during construction.
- Due to the significant presence of legally declared alien invasive species, it is recommended that active alien invasive species eradication and management measures must be implemented for the assessment area and local surrounding landscape. All stands and individuals of the identified alien invasive species must be actively eradicated from the assessment area, in accordance with the requirements of the National Environmental Management: Biodiversity Act (Act 10 of 2004); Alien and Invasive Species Regulations, 2014. Removed materials must also be adequately and lawfully disposed of, in order to prevent potential further spreading/dispersal.
- Implement an adequate Alien Invasive Species Management and Prevention Plan during the construction- and subsequent operational phases of the proposed development. Such a Management Plan must be compiled by a suitably qualified and experienced ecologist.

- Implement an adequate Stormwater and Erosion Management Plan during the construction- and subsequent operational phases of the proposed development. This must be done to sufficiently manage storm water runoff and clean/dirty water separation, in order to prevent any significant soil erosion from occurring within and around the assessment area and to attempt to maintain the ecological functionality and -integrity of the local and broader quaternary surface water catchment- and drainage area, towards the north.
- It is recommended that the development design layouts for the proposed residential infrastructure, must include adequate stormwater management measures to ensure that sufficient volumes and quality of surface water runoff from the assessment area during rainfall events, continue to be channelled through the local catchment towards the north.
- Implement suitable dust management and prevention measures during the construction phase of the proposed development.
- Construction areas and -roads to be sufficiently wetted down during the construction phase of the proposed development, in order to prevent significant fugitive dust emissions.
- Adequate operational procedures for machinery and equipment must be developed to strictly govern and restrict movement of machinery, in order to avoid unnecessary fugitive dust emissions and ensure environmentally responsible operational practices and activities.
- If hydrocarbons or other chemicals are to be stored on site during the construction phase, the storage areas must be situated as far away as practicably/reasonably possible/feasible from the wetland.
- Hydrocarbon and other chemical storage areas must be adequately bunded in order to be able to contain a minimum of 150 % of the capacity of storage tanks/units.
- Adequate hydrocarbon and other chemical storage, handling, usage and spillage clean-up procedures must be developed and all relevant employees must be sufficiently trained on- and apply these procedures during the construction phase.
- Spill kits must be readily available at the construction site. All relevant employees must be adequately trained on the correct procedure and use of the spill kits.
- Water saving initiatives must be implemented for the established development.
- Environmentally responsible water use practices and activities must be adopted for the construction- and subsequent operational phases of the proposed development.
- Provide training interventions for the relevant employees on correct environmentally responsible water use practices and activities.

- An adequate sewage management system must be installed for the proposed development within the assessment area.
- Adequate leakage detection and prevention systems must be installed into the sewage management system in order to detect any potential leakages and subsequent contamination of soil and groundwater resources.
- If any leakages or overflows of the sewage management system occur, the competent authority must immediately be notified and the necessary steps must be followed by the applicant to locate and remediate the source of contamination, as soon as practicably possible/feasible.
- The sewage management system must be inspected on a regular basis and adequately maintained over time, in order to prevent any leakages or failures.
- Domestic garbage/waste dumping within the local landscape surrounding the assessment area, must be prevented.
- Implement adequate waste collection and disposal management measures and services for the established development, in order to prevent undesired disposal/dumping into the surrounding undeveloped areas.
- Provide training interventions for the local community on the correct management of domestic waste/garbage within the established development.

9. Conclusion

The assessment area scored a very low Site Ecological Importance (SEI) value and is not viewed as being of any overall long-term conservational significance/value for habitat preservation or continued ecological functionality and -integrity persistence in support of the surrounding ecosystem, broader vegetation type or faunal and avifaunal habitats (see heading 6.5).

The depression wetland situated directly adjacent south of the assessment area, scored a low/marginal Ecological Importance and Sensitivity (EIS) value and is merely viewed as being of low overall long-term conservational significance/value for wetland habitat preservation as well as ecological functionality, -integrity and -services provision (see heading 6.2.3).

It is consequently not anticipated that the proposed development of the assessment area would pose any significant risk to achieving and maintaining national and/or provincial conservation- and persistence targets of the area or to the continued ecological functionality and -integrity of the local surrounding landscape.

It is furthermore also not anticipated that the proposed development of the assessment area would pose any significant risk to- or impact on the faunal or avifaunal communities throughout the local or broader surrounding landscape.

No significant potential long-term ecological impacts were identified for the construction- or subsequent operational phases of the proposed development. The potential long-term ecological impacts identified for the proposed development, could potentially merely add low cumulative impact to the existing negative impacts caused by the extensive existing residential and historical small-holding homestead transformation as well as historical agricultural cropland cultivation, throughout the local and broader surrounding landscape.

It is however the opinion of the specialist, by application of the NEMA Mitigation Hierarchy, that all the identified potential cumulative ecological impacts associated with the proposed development, can be suitably reduced and mitigated to within acceptable residual levels, by implementation of the recommended mitigation measures. It is therefore not anticipated that the proposed development will add any significant residual cumulative ecological impacts to the surrounding environment, if all recommended mitigation measures as per this ecological report are adequately implemented and managed, for both the construction- and subsequent operational phases of the proposed development.

It is the opinion of the specialist that the proposed development of the assessment area should be considered by the competent authority for Environmental Authorisation and approval. All recommended mitigation measures as per this ecological report must however be adequately implemented and managed for both the construction- and subsequent operational phases of the proposed development. All necessary authorisations, permits and licenses must also be obtained prior to the commencement of any construction.

10. References

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Mucina, L. & Rutherford, M.C. (eds.) 2006. The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

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www.climate-data.org

11. Details of the Specialist

Adriaan Johannes Hendrikus Lamprecht (*Pr.Sci.Nat*)

M.Env.Sci. Ecological remediation and sustainable utilisation (NWU: Potchefstroom)

South African Council for Natural Scientific Professions (SACNASP): Professional Ecological Scientist
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Abbreviated Curriculum Vitae

Qualifications

- M.Env.Sci Ecological Remediation and Sustainable Utilisation/Vegetation Ecology
 - 2010 - North West University Potchefstroom
- B.Sc Botany and Zoology (Cum Laude)
 - 2008 - North West University Potchefstroom

Accredited courses completed

- Implementing Environmental Management Systems ISO 14001
 - 2011 - North West University Potchefstroom
- Environmental Law for Environmental Managers
 - 2011 - North West University Potchefstroom
- SASS 5 Aquatic Biomonitoring Training Course
 - 2017 – GroundTruth Consulting
- Tools for Wetland Assessment
 - 2023 – GroundTruth Consulting

Professional registrations

- South African Council for Natural Scientific Professions (**SACNASP**)
 - Professional Ecological Scientist Registration number 115601
- International Association for Impact Assessment (**IAIA**)
 - Registration number 5232
- South African Green Industries Council (**SAGIC**) Invasive Species training
 - Registration number 2405/2459
- South African Wetland Society (**SAWS**)
 - Membership number 220958

Employment and Experience Background

Upon completion of his studies, Rikus started his career in 2011 as an **Environmental Professional in Training (PIT) at Anglo American Thermal Coal: Environmental Services**. He received environmental training and practical implementation experience in all environmental facets of the mining industry with the focus on: Environmental rehabilitation, land management (biodiversity and invasive species eradication), waste & water-, air quality-, game reserve-, environmental management and legislation, as well as corporate reporting. He was also appointed as the Biodiversity management custodian at Anglo American Thermal Coal collieries.

He was subsequently employed by **Fraser Alexander Tailings from October 2011 to the end of November 2015 as an Environmental Contracts Manager**, where he was responsible for the technical and operational management of all Fraser Alexander Tailings' mining environmental rehabilitation work. He was responsible for all facets of project management, as well as implementation of rehabilitation and environmental strategies, by planning activities, organising physical, financial and human resources, delegating task responsibilities, leading people, controlling risks and providing technical support.

He conducted a significant amount of quantitative and qualitative ecological vegetation monitoring during his employment period with the company. Such monitoring mainly included environmentally rehabilitated mining areas in the open-cast coal-, gold-, platinum- and chrome mining industries situated in the Free State, Gauteng, Mpumalanga, North West and Limpopo Provinces. He was involved with analysis, processing and interpretation of environmental monitoring data and compilation of high quality technical/scientific environmental monitoring reports for clients.

He was subsequently further involved with providing adequate ecological management and maintenance recommendations for rehabilitated areas. He also provided technical/scientific environmental rehabilitation support to mining clients, with regards to sufficient soil preparation and amelioration, grassing processes, as well as grass species mixtures and ratios.

He was then employed by **Enviroworks Consulting from January 2016 to the end of May 2017 as a Senior Ecological Specialist** where he was responsible for virtually all Ecological, Aquatic and Wetland specialist assessments and reporting related to Environmental Impact Assessment (EIA) and Basic Assessment (BA) projects. He also completed numerous EIA and BA projects as the main project Environmental Assessment Practitioner (EAP).

Rikus then subsequently established the company EcoFocus Consulting (Pty) Ltd at the end of May 2017, which provides high quality professional environmental and ecological specialist services and solutions to the industrial development-, construction-, mining-, agricultural and other sectors.

He possesses significant qualifications, vast knowledge, skills and practical experience in the specialist field of ecological and environmental management. This, coupled with his disciplined, determined and goal-driven approach, as well as his high level of personal standards, ensure high quality, timely and outcomes-based outputs and service delivery relating to any project.

Ecological & Wetland Specialist Assessment & Report Completion for the last two years

2024

- Proposed 0.53 ha Springbok Residential and Hospitality Development, Northern Cape Province.
- Proposed 4 ha Ingenio Academy School Development, Vanderbijlpark, Gauteng Province.
- Proposed 46.2 ha Donkerhoek Residential Development, Kimberley, Northern Cape Province.

2023

- Proposed 1 500 m² Setsoto Local Municipality Water Treatment Works Expansion and Sludge Dam Development, Clocolan, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 1 500 m² Setsoto Local Municipality Water Treatment Works Expansion and Sludge Dam Development, Clocolan, Free State Province.
- Aquatic Ecological Assessment for the proposed 9.6 km Camel Thorn Solar 132 kV Transmission Line Development, Prieska, Northern Cape Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 9.6 km Camel Thorn Solar 132 kV Transmission Line Development, Prieska, Northern Cape Province.
- Proposed 24.2 ha Virginia-Kroonstad Six (6) Borrow Pit Developments, Free State Province.

- Proposed 10.75 ha Kroonstad-Steynsrus NEMA Section 24G Two (2) Borrow Pit Developments, Free State Province.
- Ecological Compliance Statement for the proposed 11.1 ha Jacksonville Residential Development, Kimberley, Northern Cape Province.
- Proposed 52.8 km Bethlehem-Fouriesburg Pipeline Development, Free State Province.
- Ecological Rehabilitation and Alien Invasive Species Management Plan for the Konsantas Sand dam-wall decommissioning and removal, Kestell, Free State Province.
- Proposed 6.32 ha Syngenta Stilgewaght Dam Development, Bethlehem, Free State Province.
- Aquatic Ecological Assessment for the proposed 14 km Khauta Solar Photovoltaic Cluster 132 kV Everest Transmission Line Development, Riebeeckstad, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 14 km Khauta Solar Photovoltaic Cluster 132 kV Everest Transmission Line Development, Riebeeckstad, Free State Province.
- Aquatic Ecological Assessment for the proposed 13 km Khauta Solar Photovoltaic Cluster 132 kV Leander Transmission Line Development, Riebeeckstad, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 13 km Khauta Solar Photovoltaic Cluster 132 kV Leander Transmission Line Development, Riebeeckstad, Free State Province.
- Proposed Tweefontein Gauging Weir Development, Bothaville, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the proposed Tweefontein Gauging Weir Development, Bothaville, Free State Province.
- Grazing and Invasive Species Assessment for the Farm Petronella No. 579 outside Reitz, Free State Province.
- Proposed 16.1 ha Itau Milling Storage Area Development, Bloemfontein, Free State Province.
- Proposed 3.84 ha Itau Milling NEMA Section 24G Plot 40 Commercial Development project in Bloemfontein, Free State Province.
- Proposed 18.73 ha Nketoana Local Municipality Geluk Dam Development, Reitz, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 18.73 ha Nketoana Local Municipality Geluk Dam Development, Reitz, Free State Province.
- Desktop Ecological Compliance Statement for the proposed 8.69 ha Morgen Residential Development, Reitz, Free State Province.
- Proposed 5 707 ha Farm Mooimeisjesfontein No. 118 Prospecting Right, near Mahikeng, North West Province.

- Ecological Compliance Statement for the proposed 0.99 ha Rika Hannekom Hospitality Facility Development, Keimoes, Northern Cape Province.
- Ecological Exemption Letter for the Wilge Waste Water Treatment Works Upgrading, Harrismith, Free State Province.
- Proposed 18.2 ha Nketoana Local Municipality Waste Water Treatment Works Development, Lindley, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 18.2 ha Nketoana Local Municipality Waste Water Treatment Works Development, Lindley, Free State Province.
- Ecological Compliance Statement for the proposed 3.87 ha Farm Blokhuis Composting Facility Development, Harrismith, Free State Province.
- Proposed 485 ha Idwala Energy Solar Power Generation Facility Development, Sasolburg, Free State Province.
- Ecological Compliance Statement for the proposed 4.22 ha Itau Milling Plot 11 Storage Area Development, Bloemfontein, Free State Province.
- Aquatic Ecological Assessment for the proposed 0.26 ha Postmasburg Residential Development, Northern Cape Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 0.26 ha Postmasburg Residential Development, Northern Cape Province.
- Aquatic Ecological Assessment for the proposed 23.7 ha Hopetown Waste Water Treatment Works Upgrade, Northern Cape Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 23.7 ha Hopetown Waste Water Treatment Works Upgrade, Northern Cape Province.
- Aquatic Ecological Assessment for the proposed 2.9 km Migdol Pipeline Development, North West Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 2.9 km Migdol Pipeline Development, North West Province.
- Proposed 7.39 ha N1 Gariep Logistic Support Centre Development, Free State Province.
- Ecological Compliance Statement for the proposed 7.21 ha Viljoenskroon Solvent Extraction Plant Development, Free State Province.
- Ecological Compliance Statement for the proposed 4.64 ha Viljoenskroon Chicken Broiler House Development, Free State Province.
- Proposed 19.7 ha Khayamnandi Residential Development, Steynsburg, Eastern Cape Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 19.7 ha Khayamnandi Residential Development, Steynsburg, Eastern Cape Province.

- Ecological Compliance Statement for the proposed 1 ha Farm Delports Rust No. 30 Piggery Development, Welkom, Free State Province.
- Ecological Compliance Statement for the proposed 989 ha Kroonstad Mine Prospecting Right, Free State Province.
- Proposed 4.93 ha Witfontein Borrow Pit Development, Viljoenskroon, Free State Province.
- Proposed 4.96 ha Mooiwater Borrow Pit Development, Viljoenskroon, Free State Province.
- Proposed 4.96 ha Rietvlei Borrow Pit Development, Vierfontein, Free State Province.
- Proposed 4.96 ha Ventersburg Borrow Pit Development, Free State Province.
- Aquatic Ecological Assessment & Audit for the GGL Boerdery Earth Dams and Septic tanks, Arlington, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the GGL Boerdery Earth Dams and Septic tanks, Arlington, Free State Province.
- Ecological Compliance Statement for the proposed 3.75 ha Kuruman Shopping Centre and Filling Station Development, Northern Cape Province.
- Aquatic Ecological Assessment for the proposed 115 ha Farm Rooipad No. 15 Agricultural Development, Augrabies, Northern Cape Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 115 ha Farm Rooipad No. 15 Agricultural Development, Augrabies, Northern Cape Province.
- Ecological Compliance Statement for the proposed 6 464 m² Farm Twyfelfontein No. 1058 Agricultural Development, Ladybrand, Free State Province.
- Proposed 4.97 ha Munster Borrow Pit Development, Viljoenskroon, Free State Province.
- Proposed 6.1 ha Setlagole Shopping Centre Development, North West Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 6.1 ha Setlagole Shopping Centre Development, North West Province.
- Proposed 12.4 ha Nordex Energy South Africa Precast Concrete Towers Manufacturing Facility Development, Murraysburg, Western Cape Province.
- Ecological Compliance Statement for the proposed 938 m² Rabco Rabbit Abattoir Development, Boston, KwaZulu-Natal Province.
- Aquatic Ecological Assessment for the proposed Sediba Bridge Development, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the proposed Sediba Bridge Development, Free State Province.
- Proposed 4.19 ha Farm Waters Waar Rus is Leisure Residential Development, Bloemfontein, Free State Province.

- Water Use License Application (WULA) Risk Assessment for the proposed 4.19 ha Farm Waters Waar Rus is Leisure Residential Development, Bloemfontein, Free State Province.
- Animal Species Theme Compliance Statement for the proposed 18.2 ha Nketoana Local Municipality Waste Water Treatment Works Development, Lindley, Free State Province.
- Grazing and Invasive Species Assessment for the Farm Smaldeel No. 1053 outside Paul Roux, Free State Province.
- Proposed 23.3 ha Farm Koeberg No. 1663 Residential Development, Clarens, Free State Province.
- Proposed 8.52 km Magalies Water Pipeline and Reservoir Development, Sandfontein, North West Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 8.52 km Magalies Water Pipeline and Reservoir Development, Sandfontein, North West Province.
- Proposed 16.9 ha Blackrock Residential and Commercial Development, Northern Cape Province.
- Proposed 10.8 ha Farm Witfontein No. 199 Chicken Layer House Development, Bloemfontein, Free State Province.
- Proposed 4.67 ha Hotazel Hotel Development, Northern Cape Province.
- Ecological Compliance Statement for the proposed 3.89 km Masankong Road Development, Northern Cape Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 3.89 km Masankong Road Development, Northern Cape Province.
- Terrestrial Ecological Assessment for the proposed 29 ha Stompkop Dam Expansion, Reitz, Free State Province.
- Aquatic Ecological Assessment for the proposed Rietfontein Pipeline Development, North West Province.
- Water Use License Application (WULA) Risk Assessment for the proposed Rietfontein Pipeline Development, North West Province.
- Aquatic Ecological Assessment for the proposed Gamadubu and Lebonkeng Pipeline and Borehole Development, Northern Cape Province.
- Water Use License Application (WULA) Risk Assessment for the proposed Gamadubu and Lebonkeng Pipeline and Borehole Development, Northern Cape Province.
- Aquatic Biodiversity Theme Compliance Statement for the proposed Piet Plessis Borehole Development, North West Province.
- Farm Rozendal No. 475 Road Development - Environmental Legislative Requirements Report.

- Aquatic Ecological Assessment for the proposed Modimong Pipeline and Borehole Development, North West Province.
- Water Use License Application (WULA) Risk Assessment for the proposed Modimong Pipeline and Borehole Development, North West Province.

2022

- Aquatic Ecological Assessment for the proposed 178 ha A1 Groblershoop 50 MW PV Solar Plant Development, Northern Cape Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 178 ha A1 Groblershoop 50 MW PV Solar Plant Development, Northern Cape Province.
- Proposed 14.3 ha North West Department of Education Ga-Maloka Primary School Expansion project in Ga-Maloka, North West Province.
- Aquatic Ecological Site Verification Report for the proposed 661 ha Khauta Solar PV Cluster Development, Riebeeckstad, Free State Province.
- Grazing and Invasive Species Assessment for the Farm Fourina No. 362 outside Fouriesburg, Free State Province.
- Desktop ecological assessment for the proposed 2.7 ha Muller Composting Abattoir and Composting Facility Development near Frankfort, Free State Province.
- Proposed 5.22 ha Equity Properties Midway Guesthouse Development in Bloemfontein, Free State Province.
- Proposed 1.5 ha Reeco Holdings (Pty) Ltd 15 Eco-villa Units Development near Ritchie, Northern Cape Province.
- Proposed 63.4 ha Kareeberg Local Municipality Carnarvon Residential Development, Northern Cape Province.
- Legal comments and responses for the Grazing and Invasive Species Assessment for the Farms Liebenbergsvlei No. 148 & Aasvogelkrans No. 96, outside Bethlehem, Free State Province.
- Legal comments and responses for the Grazing and Invasive Species Assessment for the Farm Erfenis No. 1014, outside Bethlehem, Free State Province.
- Proposed 16.8 ha Mafube Local Municipality Strasburg Mixed Land Use Development, Frankfort, Free State Province.
- Revision of the Basic Assessment process for a poultry broiler facility on the Farm Dwarsfontein 1 IQ, near Derby, North West Province.
- Aquatic Ecological Assessment for the proposed 101 ha 80 MW Khauta West Solar PV Facility Development, Riebeeckstad, Free State Province.

- Aquatic Ecological Assessment for the proposed 87 ha 50 MW Khauta e Nyane Solar PV Facility Development, Riebeeckstad, Free State Province.
- Aquatic Ecological Assessment for the proposed 168 ha 110 MW Khauta South Solar PV Facility Development, Riebeeckstad, Free State Province.
- Aquatic Ecological Assessment for the proposed 273 ha 165 MW Khauta North Solar PV Facility Development, Riebeeckstad, Free State Province.
- Proposed 224.4 MW Prieska Power Reserve Wind Power Facility Development outside Prieska, Northern Cape Province.
- Proposed 17.4 ha Dikgatlong Local Municipality Residential Development, Delporthoop, Northern Cape Province.
- Proposed 7.91 ha Dikgatlong Local Municipality Residential Development, Delporthoop, Northern Cape Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 101 ha 80 MW Khauta West Solar PV Facility Development, Riebeeckstad, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 87 ha 50 MW Khauta e Nyane Solar PV Facility Development, Riebeeckstad, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 168 ha 110 MW Khauta South Solar PV Facility Development, Riebeeckstad, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 273 ha 165 MW Khauta North Solar PV Facility Development, Riebeeckstad, Free State Province.
- Aquatic Ecological Assessment for the proposed 3000 m² Olympic Flame Filling Station Development, Welkom, Free State Province.
- Proposed 45.6 ha Farm Reliance No. 347 Agricultural Development, Griekwastad, Northern Cape Province.
- Aquatic Ecological Assessment for the proposed 3.9 km Groblershoop 132 kV Transmission Line Development, Northern Cape Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 3.9 km Groblershoop 132 kV Transmission Line Development, Northern Cape Province.
- Proposed 18.6 ha BFW Precast Concrete Towers Manufacturing Facility Development, Beaufort West, Western Cape Province.
- Proposed 4.5 ha Botshabelo Leisure Resort Development, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 4.5 ha Botshabelo Leisure Resort Development, Free State Province.

- Grazing and Invasive Species Assessment for the Farm Klafervley No. 133 outside Volksrust, Mpumalanga Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 18.6 ha BFW Precast Concrete Towers Manufacturing Facility Development, Beaufort West, Western Cape Province.
- Ecological Rehabilitation and Alien Invasive Species Management Plan for a proposed 4.5 ha Botshabelo Leisure Resort Development, Free State Province.
- Protected Plant Species Management Plan for a proposed 4.5 ha Botshabelo Leisure Resort Development, Free State Province.
- Appeal submission against the Environmental Authorisation for a poultry broiler facility on the Farm Dwarsfontein 1 IQ, near Derby, North West Province.
- Proposed 4.18 ha Itau Milling NEMA Section 24G Plot 39 Commercial Development project in Bloemfontein, Free State Province.