EcoFocus
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Desktop Ecological Compliance Statement

Morgen Residential Development, Reitz, Free State Province

April 2023

Compiled for:

Green Box Consulting
Integrated Environmental Management

Compiled by:

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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
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 Purchase Order terms of reference
- 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

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Signature

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1. Introduction

The project applicant proposes to formally develop a portion of land for residential purposes, directly adjacent south of the town of Reitz, Free State Province. The proposed development will entail formal construction of approximately 8.69 ha in size, for the proposed residential infrastructure. 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-, faunal- and avifaunal 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 therefore consequently appointed by the EAP as the independent ecological specialist, to conduct the required Ecological study for the proposed development. This report constitutes the Desktop Ecological Compliance Statement.

2. Methodology

- 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.
- No site assessment was conducted of the proposed development area.
- Google Earth imagery as well as on-site photographs provided by the EAP, were used for this desktop assessment.

The desktop **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

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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.

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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

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Table 4: Criteria for RR calculations

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

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.

The desktop **Present Ecological State (PES)** of aquatic features associated with 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

Ecological Category	Score	Description
A	> 90-100%	**Unmodified**, natural and pristine.
B	> 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	> 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	> 40-60%	**Largely modified**. A significant loss of natural habitat, biota and subsequent basic ecosystem functionality has occurred.
E	> 20-40%	**Seriously modified**. The loss of natural habitat, biota and basic ecosystem functionality is extensive.
F	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 desktop **Ecological Importance and Sensitivity (EIS)** of aquatic features associated with 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 Categories	Score	Description
Low/Marginal	**D**	Not ecologically important and/or sensitive on any scale. Biodiversity is ubiquitous and not unique or sensitive to habitat modifications.
Moderate	**C**	Ecologically important and sensitive on local or possibly provincial scale. Biodiversity is still relatively ubiquitous and not usually sensitive to habitat modifications.
High	**B**	Ecologically important and sensitive on provincial or possibly national scale. Biodiversity is relatively unique and may be sensitive to habitat modifications.
Very High	**A**	Ecologically important and sensitive on national and possibly international scale. Biodiversity is very unique and sensitive to habitat modifications.

3. Assessment Area

The assessment area constitutes a single footprint area of approximately 8.69 ha in size. The assessment area is situated on the Remaining Extent of the Farm Morgen No. 542 (SG 21 Digit Code: F02800000000054200000), directly adjacent south of the town of Reitz, Free State Province. The town forms part of the Nketoana Local Municipality which in turn, forms part of the Thabo Mufutsanyane District Municipality. The assessment area falls within the municipal urban edge. Access to the assessment area is obtained by way of Froneman Street, from the north.

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

Figure 1: Locality map illustrating the assessment area

3.1. Climate

The rainfall of the region peaks during the summer months and the Mean Annual Precipitation (MAP) of the area is approximately 849 mm (www.climate-data.org). The maximum average monthly temperature is approximately 19.4°C in the summer months while the minimum average monthly temperature is approximately 9.3°C during the winter (www.climate-data.org). Maximum daily temperatures can reach up to 25.4°C in the summer months and dip to as low as 1.7°C during the winter (www.climate-data.org).

3.2. Geology and Soils

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

Mudstones, sandstones and shale of the Beaufort Group. Glenrosa, Bonheim, Avalon, Clovelly and Mayo soils dominate outcrops and slightly elevated areas, while moist bottomlands are rather dominated by Sepane, Arcadia, Estcourt and Rensburg soils. Mayour landtypes are Bb, Bd and Ca.

3.3. Vegetation Type and Conservation Status

Vegetation Type

According to SANBI (2006-2019), the entire assessment area falls within the Eastern Free State Clay Grassland vegetation type (Gm 3), which is characterised by flat to slightly undulating and undulating/rolling closed grasslands with streams and rivers that drain the foothills of the Drakensberg (SANBI, 2006-2019). This vegetation type is classified as Vulnerable (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, 2018), which sets out biodiversity priority areas in the province.

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

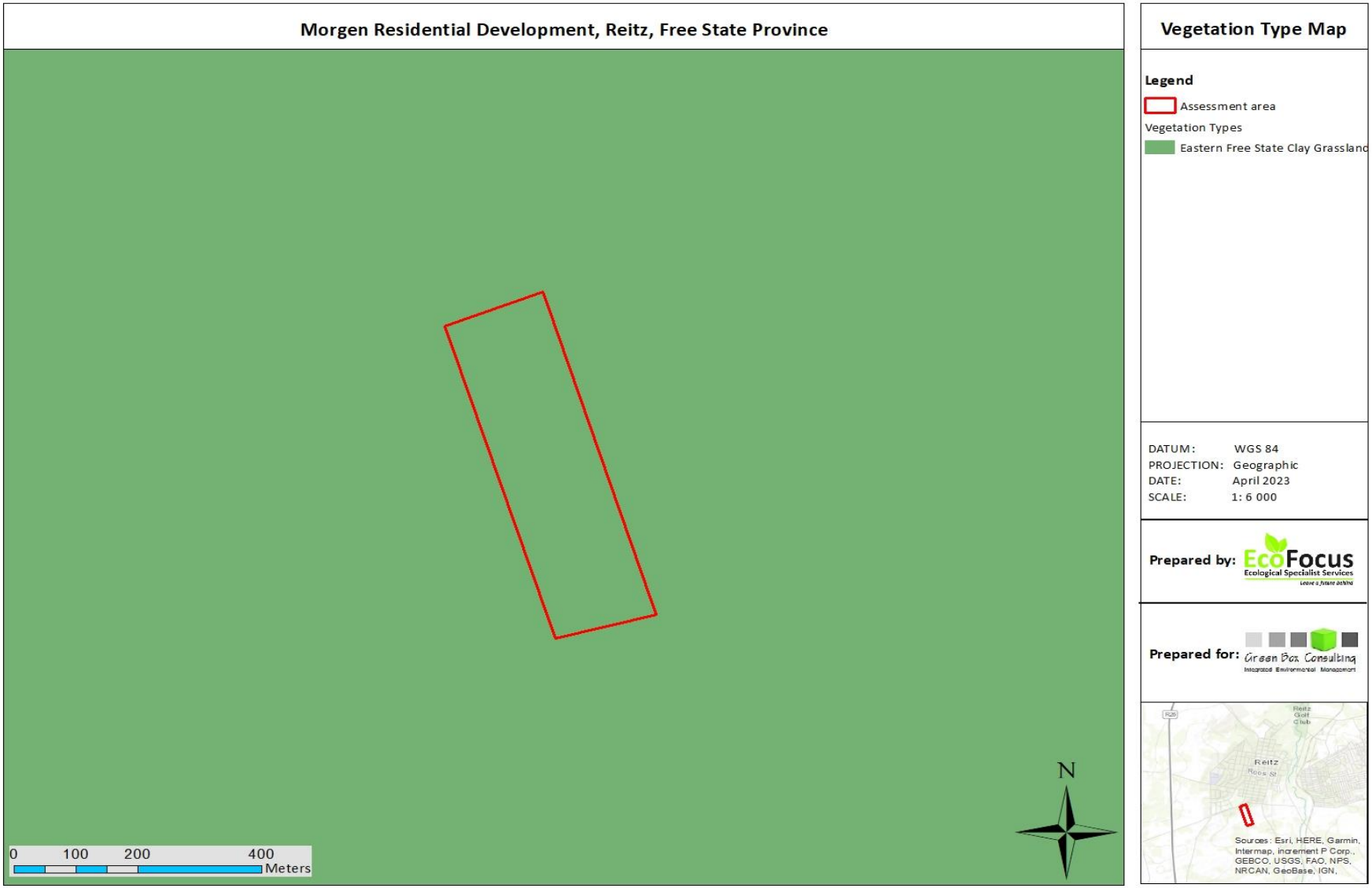

Figure 2: Vegetation type map illustrating the vegetation type associated with the assessment area

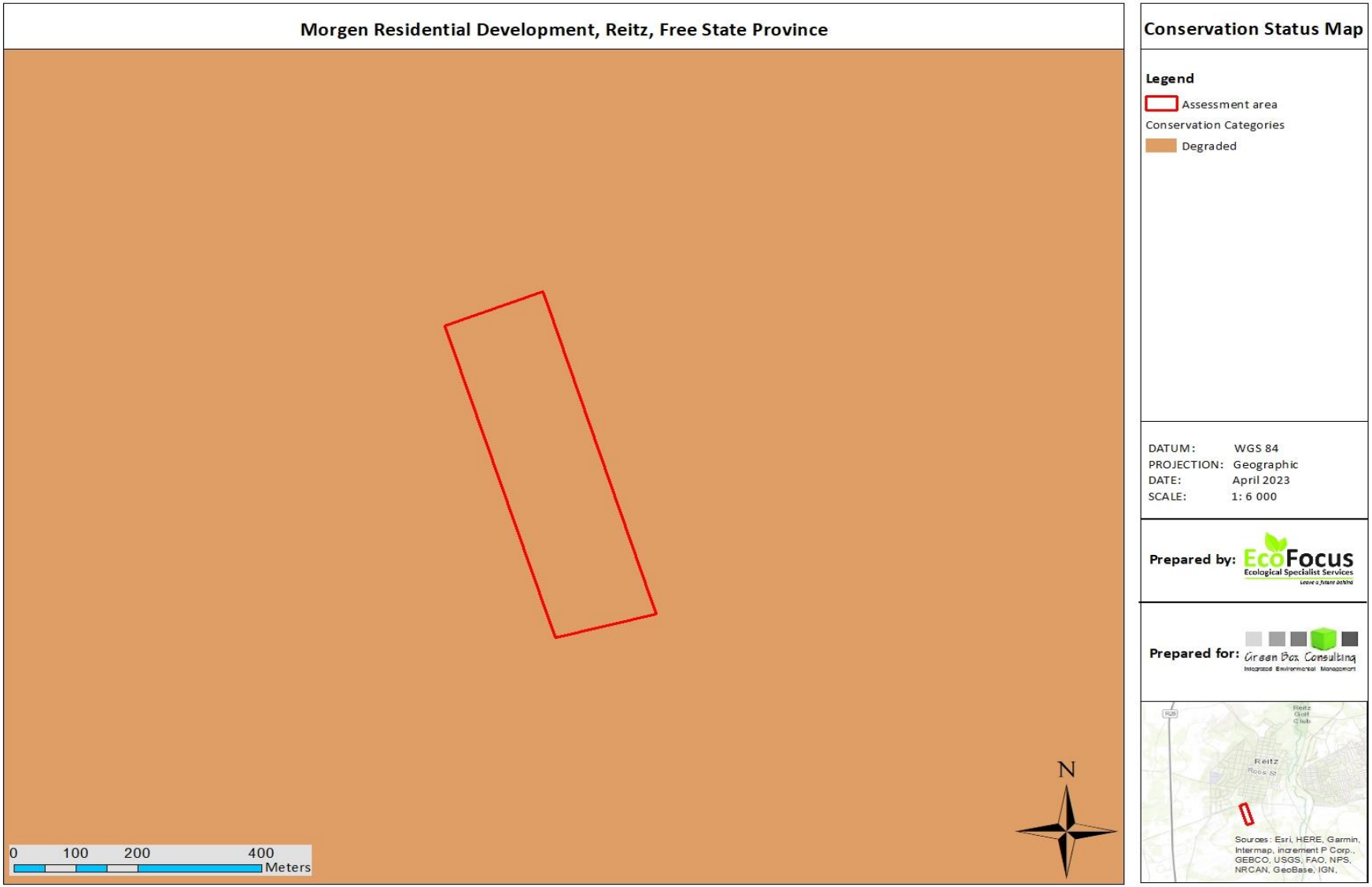

Figure 3: Conservation status map illustrating the conservation status/category associated with the assessment area

4. 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 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 development and the subsequent public reaction/opinion, which will be received during the Public Participation Process (PPP).

Gaps in knowledge can be attributed to:

- No site assessment was conducted of the proposed development area.
- Google Earth imagery as well as on-site photographs provided by the EAP, were used for this desktop assessment.
- 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 will take place within the local and broader area.

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.

5. Desktop Site Sensitivity Verification

5.1. Proposed Development Area Clearance

The assessment area constitutes a single footprint area of approximately 8.69 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 assessment area.

Extensive existing agricultural cropland cultivation and residential transformation is evident throughout the local and broader landscape surrounding the assessment area. The assessment area is therefore completely isolated from an ecological perspective.

5.2. Current Existing Vegetation and Site Description

Based on the Google Earth imagery as well as on-site photographs provided by the EAP, the assessment area mainly constitutes a low-growing terrestrial grassland habitat with a well-represented forb layer. The entire assessment area is however situated on old historically cultivated agricultural croplands. A sand borrow pit is furthermore also present within the most northerly portion of the assessment area. The grassland habitat of the assessment area is therefore in a moderately to significantly disturbed and degraded ecological state.

Although a well-represented forb layer is evident, it does not possess a high species diversity. The forb layer is mainly dominated by opportunistic pioneer- and weed species, which is most likely as a result of the historic cultivation impacts within the local landscape.

A confined cluster of the exotic tree species *Eucalyptus spp.* is furthermore present along the northern boundary of the assessment area.

The grassland habitat associated with the assessment area, is therefore not reminiscent of the natural climax state of the relevant Eastern Free State Clay Grassland vegetation type (Gm 3), which reduces the conservational significance of the area. 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.

Figure 4: Two images illustrating examples of the moderately to significantly disturbed and degraded low-growing terrestrial grassland habitat with a well-represented forb layer, associated with the assessment area

Figure 5: Image illustrating the presence of the sand borrow pit within the most northerly portion of the assessment area

Figure 6: Image illustrating the presence of the confined cluster of the exotic tree species *Eucalyptus spp.* along the northern boundary of the assessment area

Remnant remaining portions of two small, first-order seasonal water drainage lines flow past the assessment area, approximately 220 m to the south and 270 m to the north, respectively. These drainage lines have however been significantly fragmented and degraded by existing agricultural cropland cultivation and residential transformation and are therefore merely viewed as being of low if any, hydrological and aquatic biodiversity value. Due to the significant distances between these drainage lines and the assessment area along with the completely ecologically isolated nature of the assessment area, the drainage lines will however not be further impacted upon in any way by the proposed development.

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5.3. 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).

Due to the moderately to significantly disturbed and degraded ecological state along with the completely ecologically isolated nature of the assessment area, it is highly improbable that any conservationally significant or important avifaunal or other faunal species would specifically utilise the assessment area as refuge or for breeding, foraging and/or persistence purposes. The area is also subjected to continued anthropogenic activity and disturbance, which further adds to this presumption.

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 consequently not anticipated that the proposed development would pose any significant risk to- or impact on the faunal or avifaunal communities throughout the local surrounding landscape.

5.4. Site Ecological Importance (SEI), Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS)

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.

Reasoning:

The assessment area is completely isolated from an ecological perspective. The grassland habitat of the assessment area is furthermore also in a moderately to significantly disturbed and degraded ecological state. 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 also not anticipated that the proposed development would pose any significant risk to- or impact on the faunal or avifaunal communities throughout the local surrounding landscape.

Present Ecological State (PES) & Ecological Importance and Sensitivity (EIS)

Due to the significant distances between the identified two water drainage lines and the assessment area along with the completely ecologically isolated nature of the assessment area, the drainage lines will not be further impacted upon in any way by the proposed development. The PES or EIS are therefore not applicable.

5.5. 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'.

The grassland habitat of the assessment area is in a moderately to significantly disturbed and degraded ecological state. The grassland habitat associated with the assessment area, is therefore not reminiscent of the natural climax state of the relevant Eastern Free State Clay Grassland vegetation type (Gm 3), which reduces the conservational significance of the area.

Based on the outcomes and results of the site assessment, the specialist is therefore in agreement with the sensitivity 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 *Hydrictis maculicollis* (Spotted-necked otter).

No individuals of this species were however observed throughout the assessment area, during the site assessment. Due to the lack of any significant perennial watercourses, the presence of this species is highly improbable.

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

Due to the significant distances between the identified two water drainage lines and the assessment area along with the completely ecologically isolated nature of the assessment area, the drainage lines will not be further impacted upon in any way by the proposed development.

Based on the outcomes and results of the site assessment, the specialist is therefore in agreement with the sensitivity rating.

Terrestrial Biodiversity Theme

According to the Environmental Screening Tool Report, the Terrestrial Biodiversity Theme of the assessment area is rated as being of 'very high sensitivity' due to the entire assessment area falling within the Eastern Free State Clay Grassland vegetation type (Gm 3). This vegetation type is classified as Vulnerable (SANBI, 2006-2019).

The assessment area is however completely isolated from an ecological perspective. The grassland habitat of the assessment area is furthermore also in a moderately to significantly disturbed and degraded ecological state. The grassland habitat associated with the assessment area, is therefore not reminiscent of the natural climax state of the relevant Eastern Free State Clay Grassland vegetation type (Gm 3), which reduces the conservational significance of the area.

Based on the outcomes and results of the site assessment, the specialist is therefore not in agreement with the sensitivity rating, but rather concludes that the Terrestrial Biodiversity Theme of the assessment area is rated as "low sensitivity".

6. Ecological Impact Management and Mitigation

The following main ecological impact management and mitigation measures are recommended for the construction- and subsequent operational phases of the proposed development:

- 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 as well as to avoid unnecessary fugitive dust emissions and to ensure environmentally responsible construction practices and activities.
- Disturbed areas within and immediately surrounding the proposed development footprint area must be adequately rehabilitated as soon as practicably possible after construction.
- Implement an adequate Alien Invasive Species Management and Prevention Plan during the construction phase 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 allow for continued surface water flow through the assessment area and prevent any significant soil erosion from occurring within and around the assessment area.
- 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.
- Water saving initiatives must be implemented for the established residential development.
- Environmentally responsible water use practices and activities must be adopted for the established residential development.
- Provide training interventions for the local community on correct environmentally responsible water-use practices and activities within the established residential development.
- 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 underground water.
- 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 municipality to locate and remediate the source of contamination, as soon as practicably possible/feasible.

7. Conclusion

The assessment area scored a very low Desktop Site Ecological Importance (SEI) value and is therefore not viewed as being of any overall conservational significance/value for habitat preservation and ecological functionality persistence in support of the surrounding ecosystem, broader vegetation type or the persistence of the Globally Near-Threatened Red Listed mammalian species *Hydrictis maculicollis* (Spotted-necked otter).

No significant potential long-term ecological impacts were identified for the construction- or subsequent operational phases of the proposed development. It is 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.

8. References

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South African National Biodiversity Institute (2006-2019). The Vegetation Map of South Africa, Lesotho and Swaziland, Mucina, L., Rutherford, M.C. and Powrie, L.W. (Editors).

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9. 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 (No 115601)

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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

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

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.

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, Delportshoop, Northern Cape Province.
- Proposed 7.91 ha Dikgatlong Local Municipality Residential Development, Delportshoop, 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.

2021

- Proposed 126.77 ha Orania Residential development project in Orania, Northern Cape Province.
- Grazing and Invasive Species Follow-up Assessment for the Farm Tweefontein no 3344, outside Newcastle, KwaZulu-Natal Province.

- Proposed 245.5 ha Kgatelopele Local Municipality Residential development project in Danielskuil, Northern Cape Province.
- Relocation of provincially protected plant species individuals for the proposed 30 ha Portion 30 of the Farm Lilyvale no 2313 Residential development project in Bloemfontein, Free State Province.
- Proposed 0.5 ha Mduwelanga Projects Agricultural development project outside Paul Roux, Free State Province.
- Proposed Moledi Gorge Watercourse Weir NEMA Section 24G development outside Derby, North West Province.
- Revision of a proposed 135 ha Farm Zulani no 167 agricultural development project outside Douglas, Northern Cape Province.
- Grazing and Invasive Species Assessment for the Farm Kuilenburg no 241, outside Reitz, Free State Province.
- Revision of the Biodiversity Offset Feasibility Report for a proposed 385 ha Idstone Farming agricultural development projects outside Douglas, Northern Cape Province.
- Erosion and Invasive Species Assessment for the Farms Nebo A no 957, Tevrede no 1088, Sarona no 1089 & Uitkyk no 1119, outside Reitz, Free State Province.
- Proposed 267.2 ha Tswaing Local Municipality residential development project in Ottosdal, North West Province.
- Proposed 10.2 ha PepsiCo Inc residential development project in Marchand, Northern Cape Province.
- Proposed 182 ha Farm Selosesha no 900 mixed land use development project in Thaba Nchu, Free State Province.
- Water Use License Application (WULA) Risk Assessment for a proposed 182 ha Farm Selosesha no 900 mixed land use development project in Thaba Nchu, Free State Province.
- Proposed 3.5 ha Itau Milling NEMA Section 24G Solar Power Development project in Bloemfontein, Free State Province.
- Grazing and Invasive Species Assessment for the Farm Brakfontein no 244, outside Verkykerskop, Free State Province.
- Wetland/watercourse Assessment for the proposed 250 ha Subsolar Energy Serurubele Solar Development project near Bloemfontein, Free State Province.
- Water Use License Application (WULA) Risk Assessment for a proposed 250 ha Subsolar Energy Serurubele Solar Development project near Bloemfontein, Free State Province.

- Wetland/watercourse Assessment for the proposed 171 ha Subsolar Energy Sonneblom Solar Development project near Bloemfontein, Free State Province.
- Water Use License Application (WULA) Risk Assessment for a proposed 171 ha Subsolar Energy Sonneblom Solar Development project near Bloemfontein, Free State Province.
- Proposed 13.6 ha Haldon Estate development project in Bloemfontein, Free State Province.
- Wetland/watercourse Assessment for the proposed 200 ha Subsolar Energy Delta Solar Development project near Bloemhof, North West Province.
- Water Use License Application (WULA) Risk Assessment for a proposed 200 ha Subsolar Energy Delta Solar Development project near Bloemhof, North West Province.
- Water Use License Application (WULA) Specialist Opinion and Recommendation Letter for the proposed three Subsolar Energy Solar Development projects.
- Grazing and Invasive Species Follow-up Assessment for the Farm Waterval West no 653, outside Steynsrus, Free State Province.
- Proposed 25 ha Letsemeng Local Municipality landfill site development project in Luckhof, Free State Province.
- *Vachellia erioloba* Counting Report for the proposed 286 ha Subsolar Energy Gamma Solar Development project near Vryburg, North West Province.
- *Vachellia erioloba* Counting Report for the proposed 243 ha Subsolar Energy Khubu Solar Development project near Vryburg, North West Province.
- *Vachellia erioloba* Counting Report for the proposed 224 ha Subsolar Energy Protea Solar Development project near Vryburg, North West Province.
- *Vachellia erioloba* Counting Report for the proposed 262 ha Subsolar Energy Impala Solar Development project near Vryburg, North West Province.
- *Vachellia erioloba* Counting Report for the proposed 265 ha Subsolar Energy Sonbesie Solar Development project near Vryburg, North West Province.
- Ecological site suitability assessments for three potential 583 ha, 300 ha and 227 ha Alt-e Developments Herbert Phase 2 Solar Power Facility development projects near Douglas, Northern Cape Province.
- Proposed 113 ha Danrika Boerdery Edms BPK Vineyard Development project near Prieska, Northern Cape Province.
- Water Use License Application (WULA) Risk Assessment for a proposed 120 ha Northern Cape Department Agriculture Agricultural Development outside Hopetown, Northern Cape Province.

- Ecological Rehabilitation and Alien Invasive Species Management Plan for a proposed 120 ha Northern Cape Department Agriculture Agricultural Development outside Hopetown, Northern Cape Province.
- Protected Plant Species Management Plan for a proposed 120 ha Northern Cape Department Agriculture Agricultural Development outside Hopetown, Northern Cape Province.
- Ecological Stormwater and Erosion Management Plan for a proposed 120 ha Northern Cape Department Agriculture Agricultural Development outside Hopetown, Northern Cape Province.
- GIS Master Layout Plan for a proposed 120 ha Northern Cape Department Agriculture Agricultural Development outside Hopetown, Northern Cape Province.
- Grazing and Invasive Species Follow-up Assessment for the Farm Klipfontein No 71 outside Lindley, Free State Province.
- Proposed 384.3 ha Prieska Power Reserve Solar Power Facility Development outside Prieska, Northern Cape Province.
- Aquatic Ecological Assessment for the proposed Farm Bullhoek Chicken Layer Houses and Evaporation Ponds Expansion near Swartruggens, North West Province.
- Water Use License Application (WULA) Risk Assessment for the proposed Farm Bullhoek Chicken Layer Houses and Evaporation Ponds Expansion near Swartruggens, North West Province.
- Grazing and Invasive Species Assessment for the Farm Kleine Fontein No 1160 outside Bergville, KwaZulu-Natal Province.
- Proposed 1.37 km Mantsopa Local Municipality Water Pipeline Development in Ladybrand, Free State Province.
- Water Use License Application (WULA) Risk Assessment for the proposed 1.37 km Mantsopa Local Municipality Water Pipeline Development in Ladybrand, Free State Province.
- Grazing and Invasive Species Assessment for the Farm Elizabeth No 220 outside Bethlehem, Free State Province.
- Grazing and Invasive Species Follow-up Assessment for the Farm Retiefs Nek No 123 outside Bethlehem, Free State Province.
- Grazing and Invasive Species Follow-up Assessment for the Farm Brakfontein No 244, outside Verkykerskop, Free State Province.
- Proposed 107.8 ha Danrika Boerdery Edms BPK NEMA Section 24G Development project near Prieska, Northern Cape Province.